

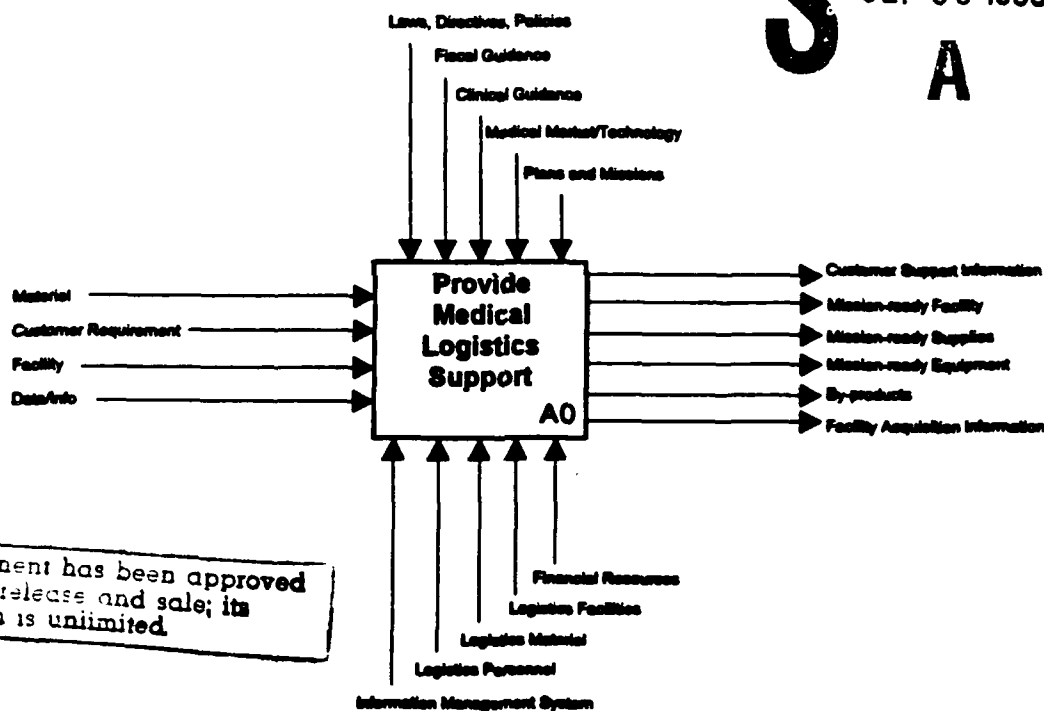
Office of the Deputy Assistant Secretary of Defense,
Health Service Operations (ODASD(HSO))
Medical Functional Integration Management (MFIM)

AD-A269 160



Medical Logistics
Functional Integration Management
Activity Based Costing
and Data Modeling Workshop

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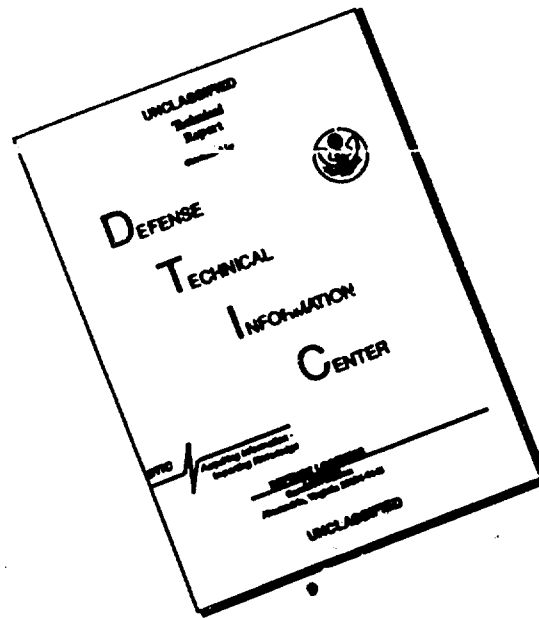


Volume I

Final Report

February 1, 1993 through April 2, 1993

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April 1993

This document was prepared by the Core Team of the Medical Logistics Workshop as a culmination of the Medical Logistics Functional Integration Management (FIM) Activity Based Costing Group and Data Modeling Group efforts. Systems Research and Applications Corporation (SRA), under contract number 903-91-D-0061, provided workshop facilitation at 2000 15th Street North, Arlington, Virginia, 22201.

Mr. Chuck Rounds may be contacted for additional information or copies of this report.

This report was published in part to satisfy the intent of the Department of Defense (DoD) 8020.1-M (Draft), *Functional Process Improvement* Document.

Other reports published through this initiative:

- **Medical Logistics Functional Integration Management Baseline/Scoping Workshop Report, January 1993**

Medical Logistics Functional Integration Management
Activity Based Costing and Data Modeling Workshop
Final Report, February 1, 1993-April 2, 1993, Vols I & II

Office of the Deputy Assistant Secretary of Defense
Health Service Operations (ODASD(HS)))
Medical Functional Integration Management (MFIM)

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The Activity Based Costing and Data Modeling Workshop convened in February 1993. The workshop participants, known as the Core Team, included representatives from the Tri-Service Medical Logistics community. The purpose of the workshop was to identify current business practices of the Department of Defense (DoD) Medical Logistics community, data entities and attributes in support of the current business, and associated activity costs. The workshop was conducted using Corporate Information Management (CIM) methodology as prescribed by DoD Directive 8020.1-M. Vol I contains the executive summary, introduction, project plan, activity models and analysis, and recommendations based on the ABC Group findings. Vol II contains the AS-IS data model and its appropriate definitions and business rules. In addition, Vol II contains the legacy system matrices developed by the Data Modeling Group.

GENERAL INSTRUCTIONS FOR COMPLETING SF 298

The Report Documentation Report (RD) is a document that provides information on a project. It is important that this information be accurate and complete. The following instructions are provided to help you complete the form correctly.

- Write in ink or indelible pencil.
- Do not use correction fluid or white-out.
- Do not use the back of the page for additional information.

Medical Logistics Activity Based Costing and Data Modeling Workshop

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Section 1

Executive Summary

The Activity Based Costing and Data Modeling Workshop convened in February 1993. The workshop participants, known as the Core Team, included representatives from the Tri-Service Medical Logistics community. The purpose of the workshop was to identify current business practices of the Department of Defense (DoD) Medical Logistics community, data entities and attributes in support of the current business, and associated activity costs. The workshop was conducted using Corporate Information Management (CIM) methodology as prescribed by DoD Directive 8020.1-M.

The CIM methodology provides a structured forum for making objective business decisions. This approach facilitates the development of a strategic plan which validates recommendations for business process improvements against established organization goals. These recommendations are described in terms of the current and desired business processes. The CIM approach requires functional experts to define current activities and how the activities can be improved to effectively and efficiently provide Medical Logistics support.

The workshop expanded the high-level activity model developed by the Medical Logistics Baseline/Scoping Workshop conducted in January 1993. The activity model provides a detailed functional representation of the current DoD Medical Logistics business practices. Concurrently, a logical data model was developed by identifying the current Medical Logistics data entities and attributes; and extracting applicable data entities and attributes from the DoD enterprise model, the Defense Finance and Accounting Service (DFAS), and Joint Logistics System Command (JLSC) data models. Business rules were developed based on the relationships of these entities and attributes. Using data provided in the Medical Logistics Functional Economic Analysis (FEA) and figures gathered during the workshop, the Core Team established baseline costs associated with individual Medical Logistics activities. Based on an analysis of existing business processes, potential improvements were identified. These improvements are presented in the form of focus papers on customer service, receipt and distribution of products, facility management, equipment management, acquisition, and training. Many improvements addressed in the focus papers may be realized through implementation of a standard system such as the Defense Medical Logistics Standard System (DMLSS).

Through the use of activity models, the Core Team validated that the Services perform the same types of activities when providing Medical Logistics support. The process of creating a logical data model demonstrated that approximately eighty percent of the data elements of the three Services are the same. Disparity exists in the mechanisms (i.e., systems, forms, and methods) used for completing these activities and the environments in which they are performed. These models establish a baseline architecture that provides a common language for the Services to communicate when defining the future environment of Medical Logistics. Further, an analysis of the activity models validated previous issues that were identified in the Medical Logistics Baseline/Scoping Workshop.

The results of this workshop provide a tool to progress to the next phase of this project. The next phase will include defining the future direction of Medical Logistics through continued use of activity and data models. The unique working relationship initiated through the coordinated and cooperative efforts of the Medical Logistics community requires continued support to meet DoD objectives.

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Section 2 Introduction

2.1 Background

The CIM Medical Logistics Subgroup was formed in March 1990 under the sponsorship of the Assistant Secretary of Defense, Health Affairs (ASD(HA)). The Subgroup surveyed common business practices in the health care industry and identified potential areas for improvement in the Military Health Services System (MHSS). An interim FEA was approved in March 1991 and an update approved in December 1992. The FEA focused on savings through reduced inventories, adoption of electronic commerce, and Just-In-Time (JIT) supply management. Based on the results of previous work, the DoD is testing prototype Prime Vendor contracts which should reduce inventories at Medical Treatment Facilities (MTFs). The Subgroup Specialty Teams for Equipment Management and Facilities Management met in March 1992 with work continuing, intermittently, through August 1992. In December 1992, the Proponent Steering Subcommittee nominated and the Director of MFIM approved selection of a Functional Program Manager and an Automated Information System Program Manager.

Following the release of the DoD 8020.1-M in August 1992, a workshop was convened in January 1993 to bring previous work in line with Functional Program Management guidelines and to complete high-level Integrated Computer Aided Manufacturing Definition Language (IDEF) activity models. The two-week workshop focused on Medical Logistics activities that are performed across the continuum of the MHSS mission.

The Core Team validated many of the high-level business process improvement issues which were identified by the Medical Logistics Subgroup. Those issues were reorganized and incorporated into the Baseline/Scoping Workshop Report.

A new workshop convened in February 1993 with the dual purpose of refining and modifying the existing decomposition diagram for Activity Based Costing (ABC) and creating a data model. Two workshop groups were formed: ABC and Data Modeling. The ABC Group modified and further decomposed the activity models, performed activity based costing, and identified potential business process improvements. The Data Modeling Group created the AS-IS data model to build the foundation for the TO-BE scenario.

2.2 Mission and Scope of Functional Activity

Medical Logistics supports the MHSS mission by providing timely resources to enhance health care delivery in peacetime and promote wartime readiness and sustainability. Medical Logistics operates within the scope of the MHSS by providing a comprehensive range of materiel, facilities, services, and information supporting the worldwide scope of MHSS operations. The mission of health care logistics is to provide support at the most reasonable cost to meet the mission objective of sustaining a total quality force.

2.3 Activity Based Costing Group Mission

The mission of the ABC Group was to refine, validate, and expand the current AS-IS activity models, estimate costs based on activities, and recommend business process improvements.

2.4 Data Modeling Group Mission

The mission of the Data Modeling Group was to develop and document the AS-IS Medical Logistics data model based on entities and attributes of current business practices and legacy systems. In addition, business process improvements were to be identified.

2.5 Workshop Approach

The project was initiated with various training seminars on CIM, data and activity modeling, performance measures, and ABC. Following these seminars the Core Team formed two working groups: ABC and Data Modeling.

The ABC Group began by reviewing and validating the activity models that were created in the Medical Logistics Baseline/Scoping Workshop in January 1993. Based on this review, the models were modified, and appropriate revisions were made to the activity descriptions and input, control, output, and mechanism (ICOM) definitions. The ABC Group continued to refine the activity models by further decomposing the activities.

As a result, the ABC Group documented the AS-IS environment of Medical Logistics through the development of the IDEF0 node tree, context diagram, and decomposition diagrams. Activities and their associated ICOMs were defined. In addition, the group documented business process improvement ideas discovered during the modeling sessions.

A performance measure foundation was established so that future progress could be measured. Using costs documented within the current Medical Logistics FEA as a baseline, estimated costs were developed for each activity.

The business process improvement ideas, identified and recorded in the modeling sessions and activity analysis, were reviewed to develop improvement opportunities which were categorized into one or more focus areas. As a result of performing the improvement idea analysis, some ideas were combined or deleted. Based on the viewpoint of the ABC Group, focus areas were developed.

The Data Modeling Group began by identifying and defining various entities related to the function of performing Medical Logistics in the AS-IS environment. Relationships between entities were established to describe the nature of how one entity is associated with another entity. These relationships were used in developing business rules for the data model.

The Medical Logistics legacy systems played an important role in defining entities. The various legacy systems were reviewed to ensure that the data model captured the essential elements of the existing systems. Legacy system matrices were created to cross reference legacy systems' data to the model.

In addition to using the legacy systems to define entities, the Data Modeling Group also used the AS-IS activity models as they were being developed by the ABC Group. The data model was compared to the activity models to ensure that all inputs and outputs were captured within the data model.

During the data modeling sessions, the group identified critical issues and data entities that would not be addressed during the AS-IS data modeling sessions. These issues and entities were documented to ensure that they will be covered in the TO-BE workshop.

As the Data Modeling Group continued to develop the AS-IS data model, various business process improvement ideas were identified. These improvement ideas were integrated with the ABC Group's ideas to develop more complete focus areas.

To increase unification of the two working groups, a full team integration meeting was held on an as-needed basis. At these meetings, the working groups presented an overview of the week's progress and resolved issues identified during the workshop sessions.

As a result of these work groups, a two volume report was completed. Volume I contains the executive summary, introduction, project plan, activity models and analysis, and recommendations based on the ABC Group findings. Volume II contains the AS-IS data model and its appropriate definitions and business rules. In addition, Volume II contains the legacy system matrices developed by the Data Modeling Group.

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Section 3 Project Plan

3.1 Workshop Objectives

The Core Team established the following workshop objectives:

- review and validate current Medical Logistics activity models and further decompose these activities;
- establish baseline costs for Medical Logistics activities;
- establish a foundation for measuring business process improvements;
- identify opportunities for improvement;
- develop the AS-IS data model to include the appropriate definitions and business rules;
- identify the relationships of legacy system attributes to the AS-IS data model; and,
- identify TO-BE data issues.

3.2 Workshop Scope

The scope of the Provide Medical Logistics Support model includes all the activities that are performed during Medical Logistics operations. For the purpose of this workshop, administrative support functions such as general military and civilian personnel training, conducting annual performance evaluations on military and civilian personnel, and general administrative programs are considered to be outside the scope of the models.

3.3 Critical Success Factors

In ensuring the achievement of the mission and objectives, the Core Team determined the following factors to be the most critical:

- recommendations must be practical and achievable;
- workshop products must represent Core Team consensus;
- workshop products must go through a quality assurance review before publication; and,
- participation of all Core Team members is essential.

3.4 Medical Logistics Workshop Participants

ABC Group

<u>Name</u>	<u>Organization</u>
Blum, Christopher	AF Medical Logistics Office
Dorr, William	USAMMA
Haas, Robert	National Naval Medical Center
Hughes, Paula	Elgin AFB Hospital
Knotts, John	Naval Healthcare Support Office, Norfolk
Pease, Alan	MFIM
Phillips, Larry	Naval Healthcare Support Office, Jacksonville
Thibodeau, Ron	Sherikon, Inc.
Via, David	USAFE

Data Modeling Group

<u>Name</u>	<u>Organization</u>
Abeya, Edwin	Sherikon, Inc.
Alexander, Jim	Sherikon, Inc.
Beam, Robert	Irwin Army Hospital
Bird, Chuck	Defense Medical Standardization Board
Cadena, John	USAF Medical Center, Wright-Patterson
Davenport, Bonnie	Portsmouth Naval Hospital
Fowler, Pam	USA Health Care Systems Support Activity
Fraser, Carol	Brooke Army Medical Center
Gervin, Jeff	TAMMIS Project Management Office
Holland, James	AF MedLog Office DBOF
Kurmel, Thom	USA Health Facility Planning Agency
Tackitt, R.D.	MFIM
Thompson, Daniel	USAMMA
Ziemke, Lisa	Naval Medical Information Management Center

Observers

<u>Name</u>	<u>Organization</u>
Rappaport, Ilana	EDS
McAdams, Alan	EDS

Subject Matter Experts (called in as needed)

<u>Name</u>	<u>Organization</u>
Clarke, John H.	Army Surgeon General
Cross, Bill	USA Health Facility Planning
Duvall, Garry	MFIM
Penatoski, Ed	DMFO
Sietsema, Harvey	MFIM
Stusnik, Joe	BUMED

SRA Project Management

<u>Name</u>	<u>Role</u>
Rounds, Chuck	Project Manager

SRA Activity Based Costing Facilitation Staff

<u>Name</u>	<u>Role</u>
Smith, Debbie	Facilitator
Parker, Ken	Functional Analyst
Coville, Pat	Assistant Facilitator
Gay, Michele	Assistant Facilitator
Borden, Jennifer	Modeling Technician
Kanapesky, Christine	Modeling Technician

SRA Data Modeling Facilitation Staff

<u>Name</u>	<u>Role</u>
Orr, Charlie	Facilitator
Murray, Janet	Facilitator
Schweigert, Stefania	Assistant Facilitator
Fritz, Gaynell	System Analyst

Addresses and phone numbers of the ABC and Data Modeling Groups, Observers, and SRA personnel are located in Appendix A.

3.5 Activity Based Costing Work Schedule

Activity	February			March			
	1-5	8-12	16-19	1-5 *	8-12	15-19	22-26
Workshop Training	✓						
Workshop Introduction	✓						
Establish Project Goals and Mission	✓						
Review Current Activity Models	✓						
Further Decompose Activity Models	✓	✓	✓				
Define Improvement Ideas	✓	✓	✓				
Complete ICOM Definitions and Activity Descriptions			✓				
Develop Baseline Metrics			✓				
Complete ABC				✓	✓		
Structure Improvement Opportunities				✓	✓	✓	
Develop Focus Areas						✓	✓
Complete Final Documentation							✓

3.6 Data Modeling Work Schedule

Activity	February			March				
	1-5	8-12	16-19	1-5 *	8-12	15-19	22-29	30-2
Workshop Training	✓							
Workshop Introduction	✓							
Develop Entity Relationship Diagram	✓	✓						
Develop Key-based Model		✓	✓					
Identify Equipment Attributes				✓	✓			
Identify Supply Attributes						✓	✓	
Complete Final Review								✓
Complete Final Documentation								✓

* The workshop was not in session during the week of 22 February through 26 February.

3.7 Project Management Plan

The next step in this project is to conduct a TO-BE activity and data modeling workshop. This workshop will begin on April 12, 1993 and conclude on June 11, 1993. The following tasks will be completed in this workshop:

- Identify the vision and goals of the Medical Logistics community;
- Establish performance measures and objectives using the foundation defined in the ABC and Data Modeling Workshop Report;
- Complete TO-BE data and activity models; and,
- Produce a TO-BE workshop report.

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Section 4

Activity Models

4.1 Activity Modeling Techniques

Modeling is a structured, analytical method of studying and documenting activities. Modeling employs a language, or syntax, to document business processes and data in a structured format.

The IDEF modeling techniques employed during this project were originally developed by the U.S. Air Force with contractor support, and are therefore public domain. The use of IDEF is widespread throughout government and private industry, and has proven to be an effective tool to aid in management and requirements definition.

Activity models (IDEF0) are used to aid in analysis and documentation of the business processes. Information flows and roles are defined (e.g., inputs, controls, and outputs) for each activity or subactivity. Additionally, the systems, people, and equipment that perform the activities (mechanisms) are identified as part of the process.

4.2 Introduction to Activity Models

An activity model is a graphic representation of the business functions within the enterprise. The model depicts the work or processes performed in a business area. The primary purpose of the activity model is to discover the information needs and their roles within the enterprise. An activity is depicted as a rectangular box, and represents a process, action, or task that is accomplished over a period of time. It has a name which is shown as a single action verb with a single explicit object that describes the process, action, or task that an activity represents. An activity will transform a set of inputs into products, enabled by resources, and constrained by a set of controls.

The team develops the activity models from their collective knowledge about the process during facilitated sessions. Subject matter experts may be interviewed in the areas the team determines to be outside of their collective expertise. They may also gain knowledge and insight into the processes through any available materials such as documents, forms, procedures, and existing activity models. The scope, purpose, and viewpoint are boundaries that help the modelers determine what is relevant for inclusion in the model. A detailed explanation of activity modeling techniques and the components of an activity model is provided in Appendix B.

An activity model has three components:

- Node Tree
- Context Diagram
- Decomposition Diagrams

4.3 Node Tree Diagrams

Node tree diagrams are used to portray activities in a hierarchical format. Each activity is represented by a dot. The complex activity that entails the scope of the activity model is placed above its component subactivities, with lines connecting the top node to each subactivity node. The sum of the subactivities equals the whole of the activity. It is analogous to a work breakdown

structure. The component nodes may be further decomposed into their sub-components, until the modelers feel that they have adequately represented the required activity breakdown. Each node is labeled with the name of the activity or subactivity it represents, with an additional identifier consisting of a letter followed by one or more numerals. A node tree diagram is often thought of as a table of contents for the activity model. As such, it depicts the breadth of the business area being modeled and the depth of the modeling effort.

4.4 Context Diagrams

The complex activity represented in the context diagram is equivalent to the top most activity node in the node tree diagram. A context diagram consists of a single activity box and its related ICOMs. The context diagram establishes the scope of the process being modeled. ICOMs are used to represent information or materials used in or produced by an activity, and data or objects involved in an activity. The ICOM names or labels are nouns and noun phrases. An ICOM has four possible roles relative to an activity:

- **Input.** Information or materials which are transformed or consumed in the production of the outputs of an activity. (Arrow entering left side of an activity box.)
- **Control.** Information or materials that govern, constrain, or trigger the operation of an activity. It regulates the transformation of inputs to outputs. (Arrow entering the top of an activity box.)
- **Output.** Information or materials that are produced by an activity or results from an activity. (Arrow leaving the right side of an activity box.)
- **Mechanism.** People, machines, resources, or existing systems that perform (enable) an activity, or provide energy to an activity. (Arrow entering the bottom of an activity box.)

4.5 Decomposition Diagrams

A decomposition diagram describes the details of an activity and the relationships between the activities in a decomposition level. In the decomposition process, the modelers break down an activity by determining its subactivities. The ICOMs that interact with the activities are depicted, documenting the activity associations and the roles of data within the process. Unlike a node tree, which can show several levels of sub-component activities at once, a decomposition diagram shows only one level of the subactivities. Each decomposition diagram further details the component activities of its parent activity. The activity modelers check to ensure that the activity views are consistent from one level to the next.

4.6 Medical Logistics Node Tree

The node trees produced in the workshop, shown on pages 4-5 through 4-12, represent the scope of the activities being modeled by this group. The group began by reviewing the node tree produced in the Baseline/Scoping Workshop, January 15, 1993. Based on this review, certain functional areas were identified for modification and expansion in order to better represent the way Medical Logistics functions today. Each node or dot on the diagrams represents a significant activity, and each line represents a decomposition relationship between the activities.

4.7 Medical Logistics Activity Models

During the Baseline/Scoping Workshop, a set of decomposition diagrams were developed depicting the AS-IS Medical Logistics functional environment. During the modeling sessions continuous discussions took place regarding the use of a commodity versus a life cycle approach. The consensus of the group was to use the commodities AS-IS model because it accurately reflected how the Medical Logistics community actually conducts business today. Even though it may reflect a dysfunctional and non-integrated approach, it represents the business today. Appendix C further explains why this approach was used.

The Provide Medical Logistics Support context diagram (A-0) shown on page 4-15 reflects the highest level of the processes examined in this workshop. It illustrates the major ICOMs involved in the business of providing Medical Logistics support. The purpose of this model, as noted on the context diagram, is to define and document the way Medical Logistics conducts business today.

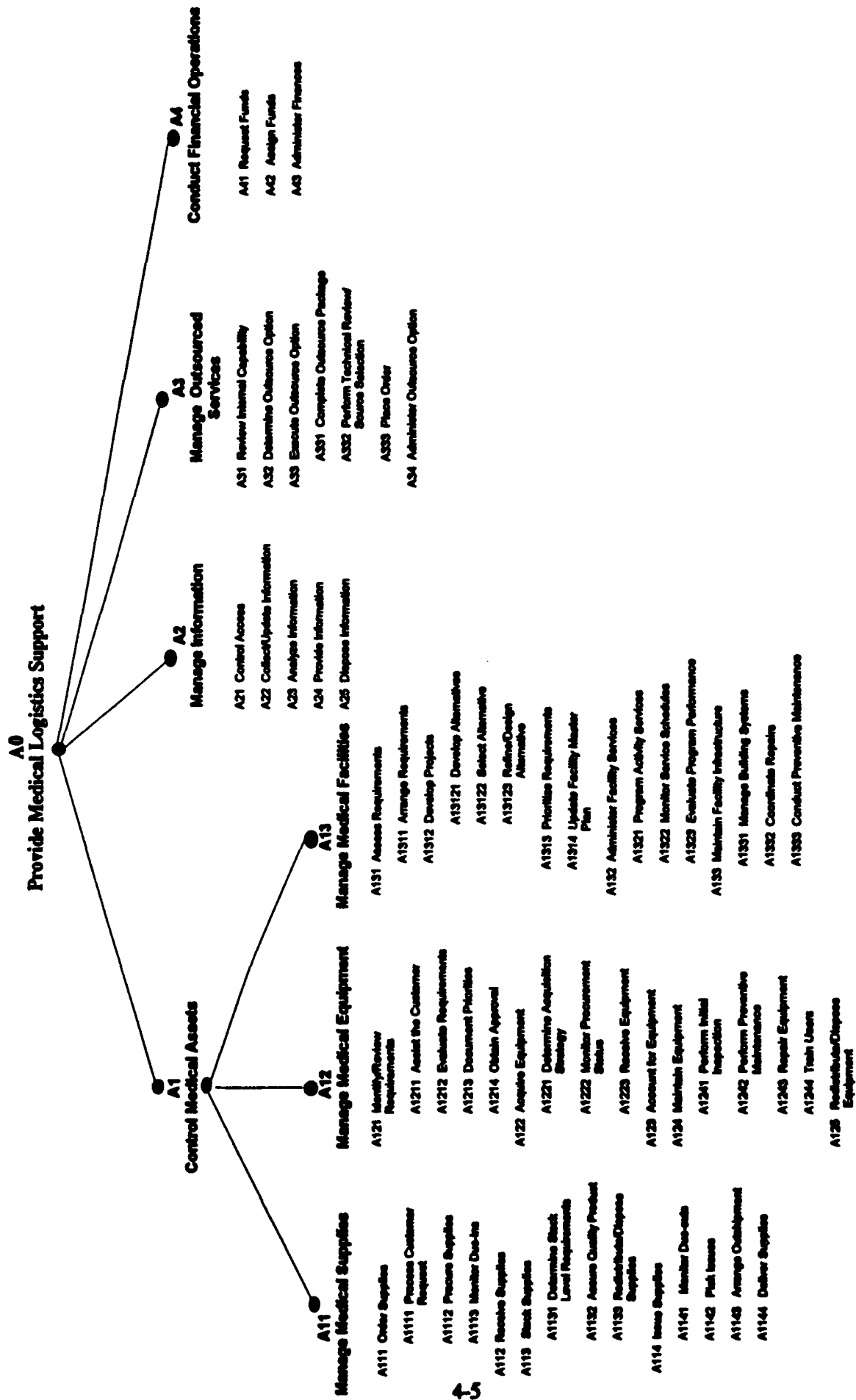
The decomposition diagrams that follow on pages 4-17 through 4-53 represent the subactivities associated with providing Medical Logistics support. These models were completed from the viewpoint of the corporate Medical Logistics manager. The activity descriptions can be found on the opposite page of each model, as well as in Appendix D. The ICOM definitions associated with the models are provided in Appendix E.

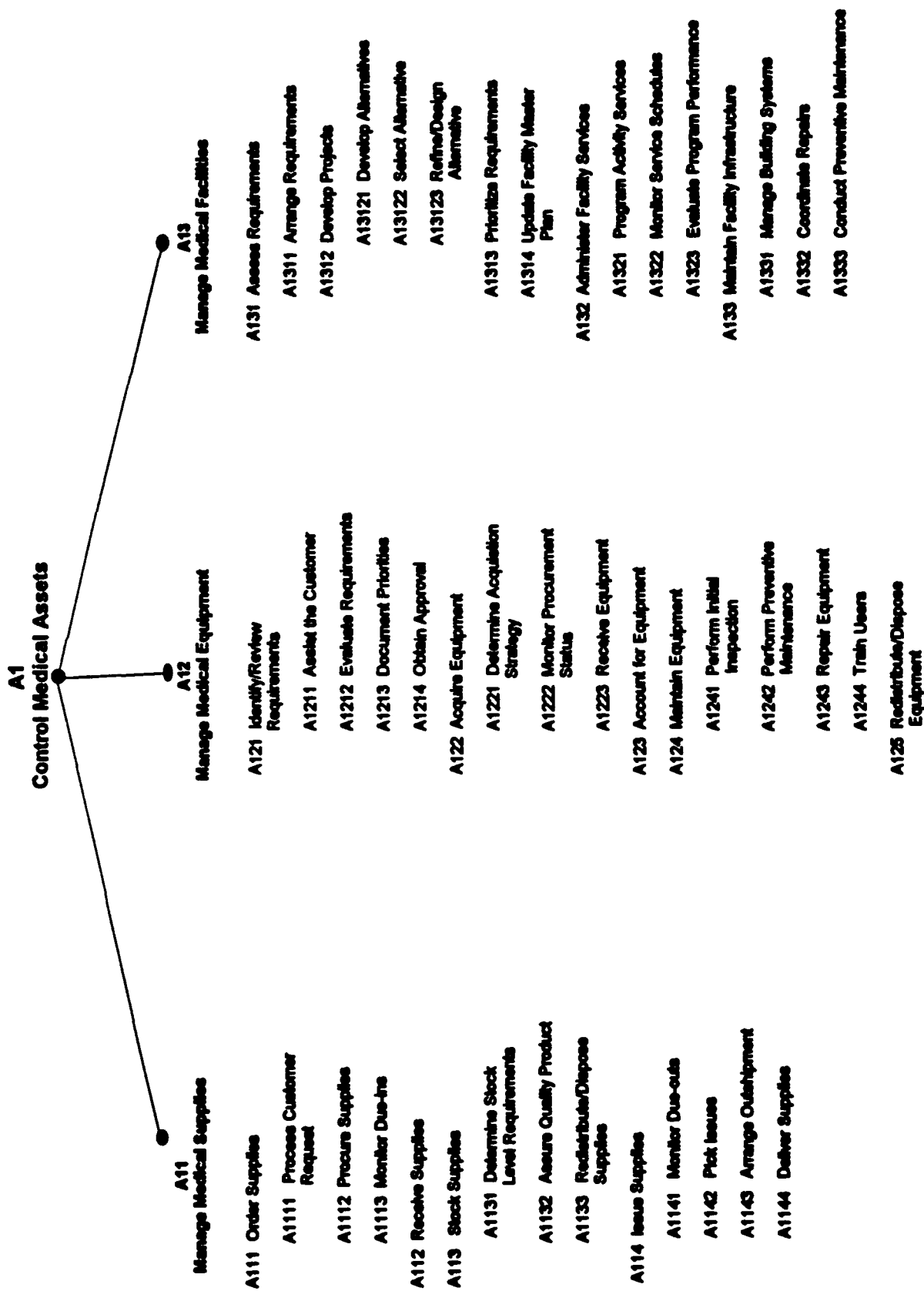
The ABC Group began the modeling session by reviewing and validating the Baseline/Scoping Workshop activity models. This resulted in many changes to the original AS-IS models. The list below reflects major revisions to the original models.

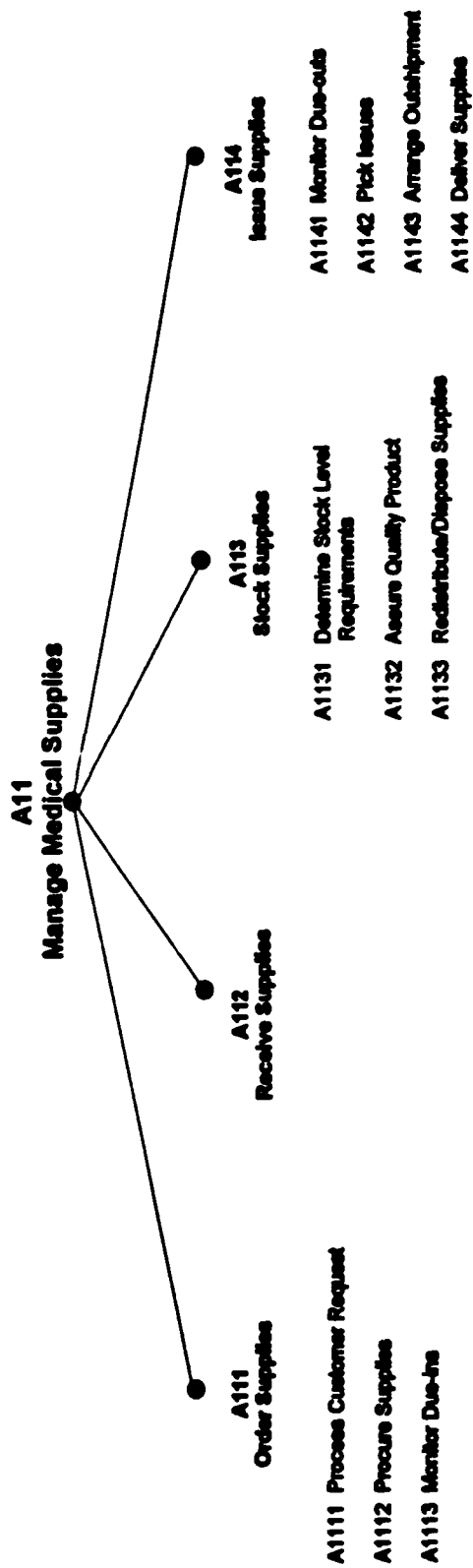
- Administer Finances was removed from the Provide Medical Supplies activity, and Program Funding was removed from the Manage Medical Equipment activity. These changes resulted from the workgroup consensus that all areas of Medical Logistics (e.g., supplies, equipment, and facilities) dealt with finances and funding in the same manner. Due to this consolidation the high level activity, Conduct Financial Operations, (A4), was created to encompass the above processes that were removed.
- To assist in reviewing the models, the Manage Medical Supplies, Equipment, and Facilities were combined at the A0 level to form a single activity of Control Medical Assets. Control Medical Assets was decomposed in its original form at the A1 level to reflect Manage Medical Supplies, Manage Medical Equipment, and Manage Medical Facilities.
- The activities decomposed under Manage Medical Supplies were revised as a result of the review and validation process.
- The activities decomposed under Manage Medical Facilities were revised as a result of the review and validation process.
- Based on a review of the products produced as a result of collecting and analyzing data, the ABC Group concluded that decision support information was only part of a larger category of "information:" customer support information. In addition, it was concluded that not only did Medical Logistics provide information, it also managed information. As a result, the original activity, Provide Decision Support Information, was changed to Manage Information. This new activity encompasses more of the

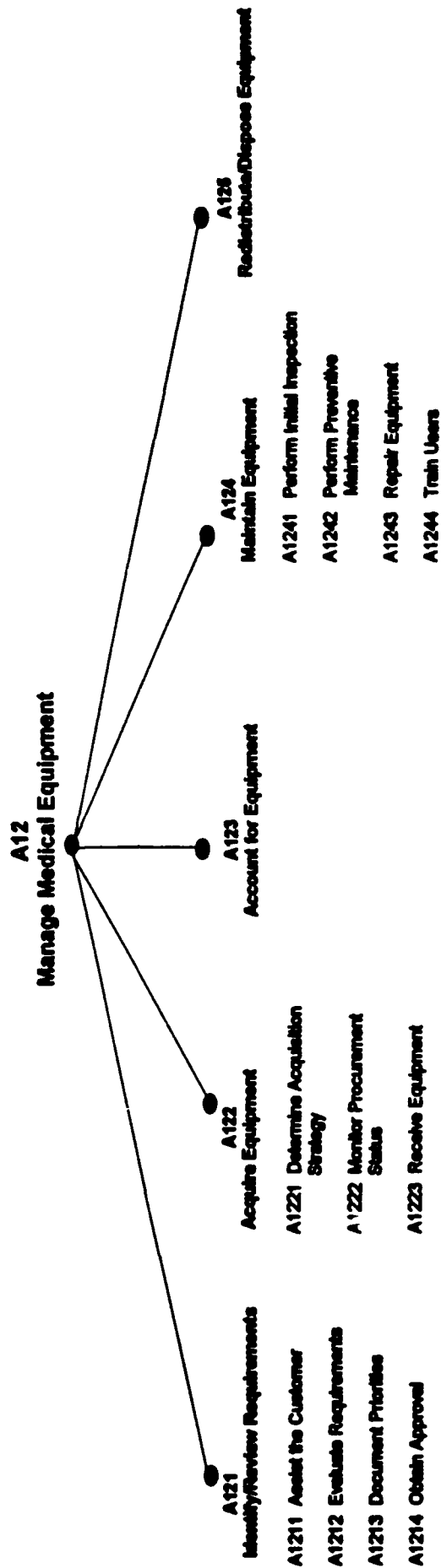
current activities that Medical Logistics performs when dealing with information. As a result of this change, major outputs of decision support and logistics information were combined to form customer support information.

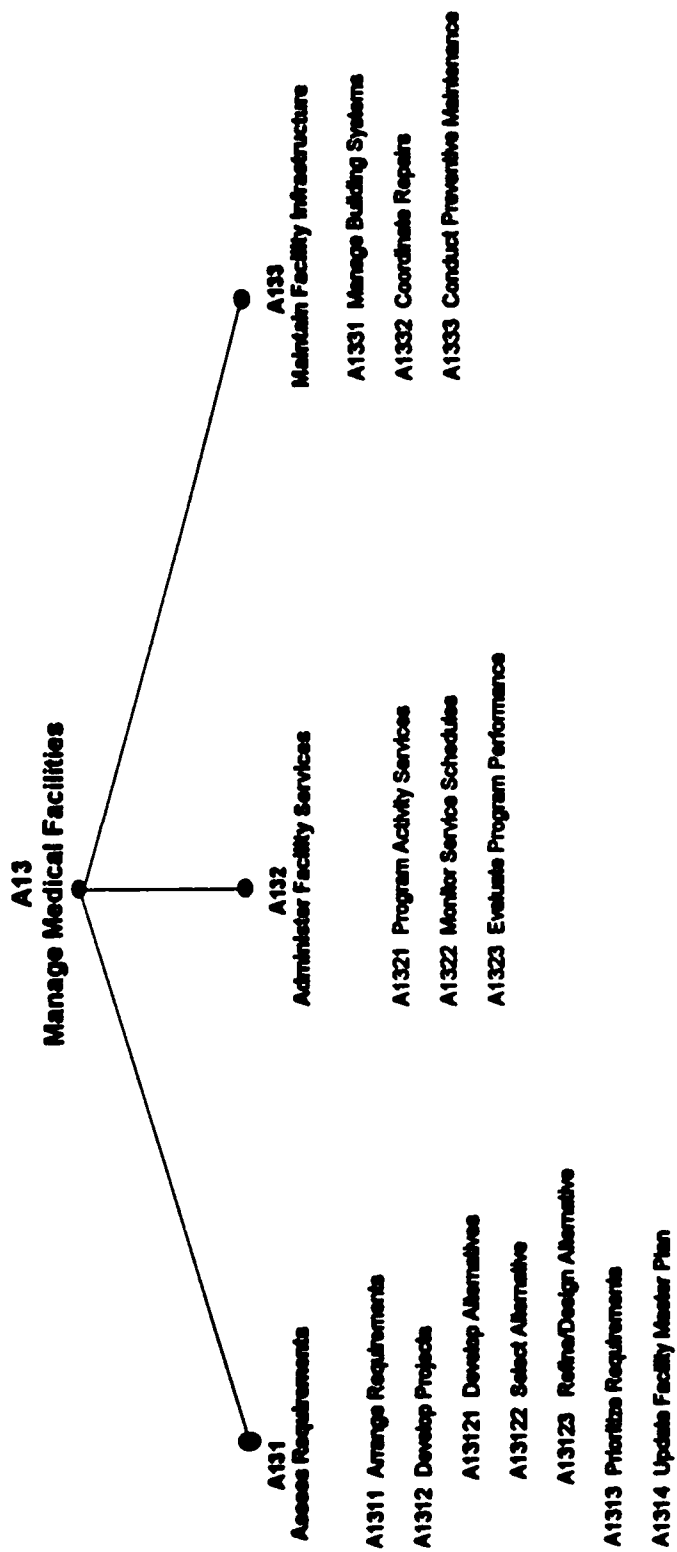
- During the Medical Logistics Baseline/Scoping Workshop, the ICOM "Information Management System" was defined as either a manual or automated system. Upon further analysis of the activities, it was concluded that all activities use some type of manual system; therefore, the ICOM "Information Management System" added no value to the models. Based on this analysis and to add value to the ICOM, the definition was changed to show that the models would only reflect automated information management systems. To assist in this task, an information management system matrix (Appendix F) was completed. Specific information management systems are shown on the models only at the lowest level activities (leaf nodes) to which they apply.
- Activity descriptions and ICOM definitions have been modified to reflect the refinement of the models.

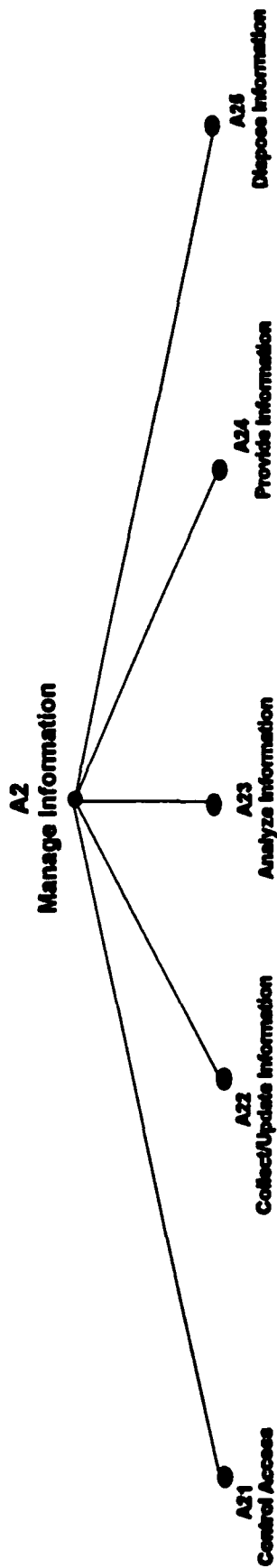


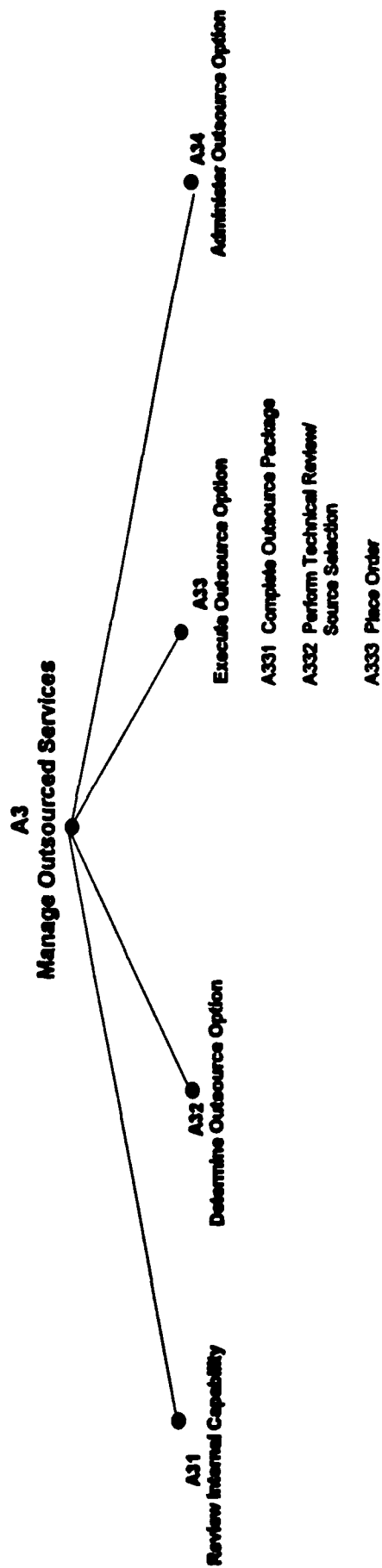


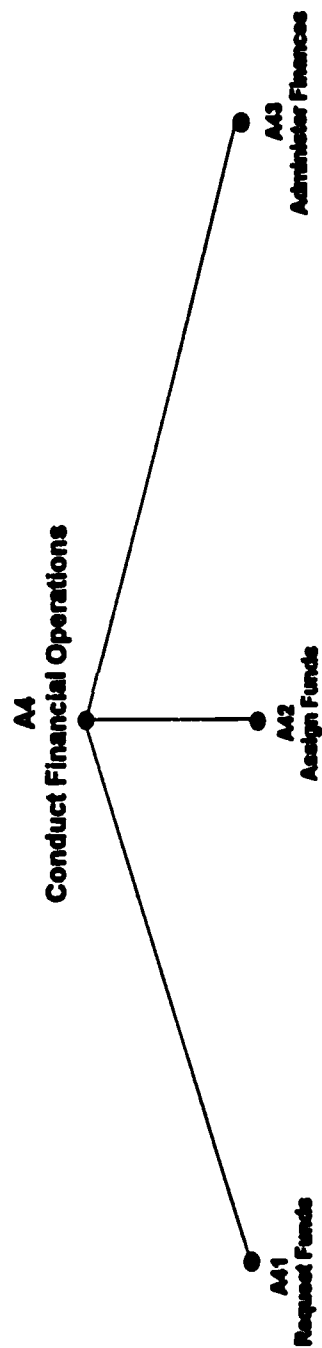












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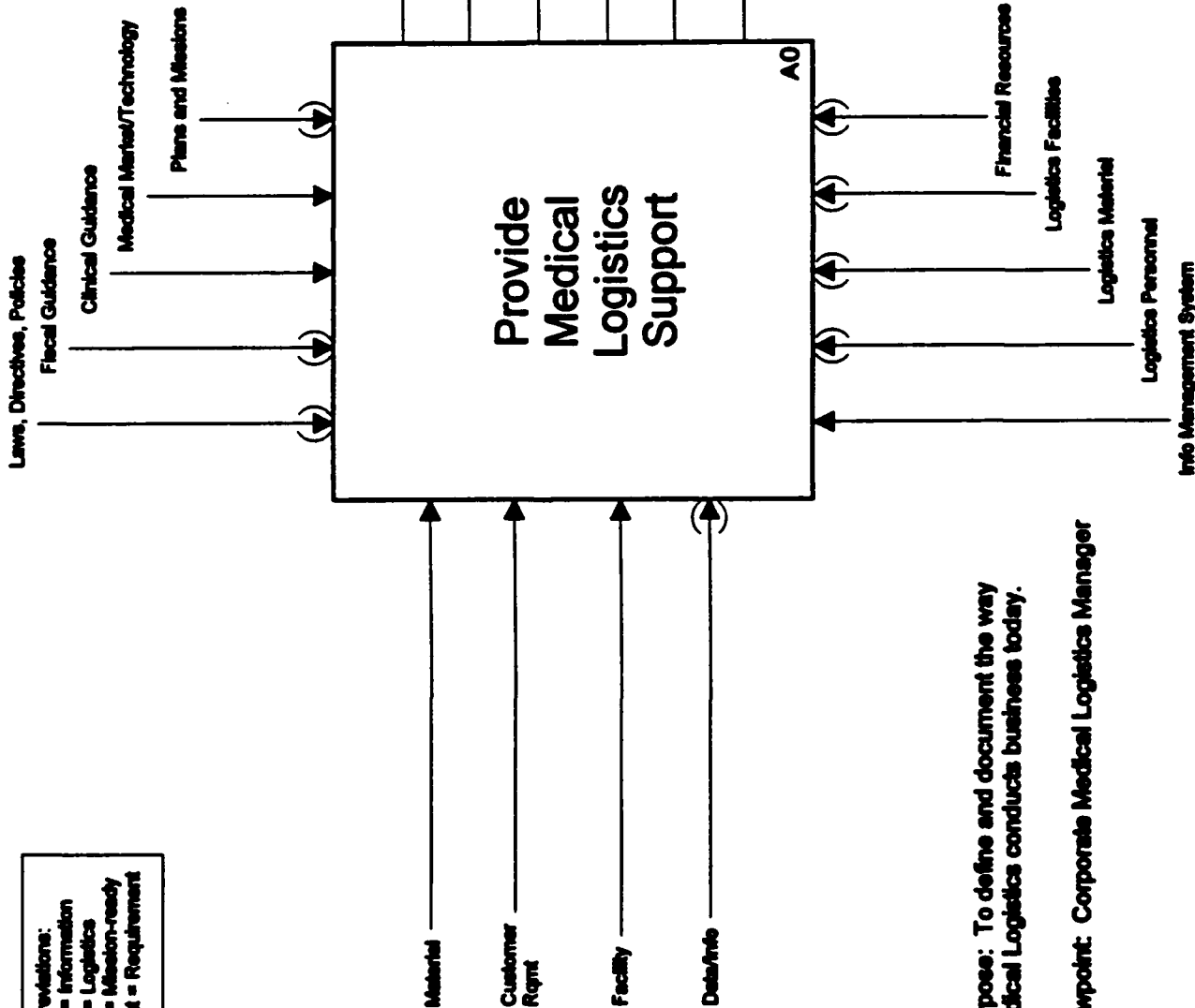
A0 Provide Medical Logistics Support

This is the functional activity which plans and executes support for military medical operations across the continuum of conflict. It provides or arranges for the following mission resources consistent with contemporary standards of care and professional requirements of health care providers: 1) design and development, identification, acquisition, storage, movement, distribution, maintenance, and disposition of clinical supplies, equipment, technology, and assemblages; 2) acquisition or construction, maintenance, operation, and disposition of military treatment facilities and contingency hospitals; 3) acquisition of specialized and professional services; and 4) collection and dissemination of information needed for effective planning and operations. (Adapted from Joint Chiefs of Staff (JCS) definition of logistics.)

Reference: Logistics is the science of planning and carrying out the movement and maintenance of forces. In its most comprehensive sense, it consists of those aspects of military operations which deal with: a) design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of materiel; b) movement, evacuation, and hospitalization of personnel; c) acquisition or construction, maintenance, operation, and disposition of facilities; and d) acquisition or furnishing of services. (Source: JCS Pub 1, 1 June 1987, pages 213-214)

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Abbreviations:
 Info = Information
 Log = Logistics
 MR = Mission-ready
 Rgmt = Requirement



Purpose: To define and document the way Medical Logistics conducts business today.

Viewpoint: Corporate Medical Logistics Manager

Note: The "0" notation applied to the Logistics Personnel, Logistics Materiel, Logistics Facilities, and Financial Resources indicates that these mechanisms are not explicitly shown on the decomposition. It should be noted that these mechanisms are applied to all of the activities that are performed within the scope of the context. The same holds true for the Laws, Directives, Policies, Fiscal Guidance, and Plans and Mission controls, as well as the Data/Info input.

NODE: A-0	TITLE: Provide Medical Logistics Support	NUMBER:
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A1 Control Medical Assets

Control Medical Assets produces mission-ready equipment, supplies, and facilities. These products, where appropriate, have received proper maintenance checks and quality assurance processing. They have been found to be safe, reliable, and capable of fulfilling their assigned missions in the health care field. These products are monitored throughout their life cycle, from determining and assessing requirements to acquiring, managing, and disposing of these assets. In response to customer needs, an evaluation process occurs. Each requirement is reviewed and then validated to become either a funded, rejected, or cancelled requirement. To meet customer requirements, organic capabilities must be assessed to determine if the goods or services can be provided from available Medical Logistics assets, in-house personnel, or an outsource request from outside the Medical Logistics organization.

A2 Manage Information

Logistics information is assembled and packaged in a usable format in response to an internal or external requirement. The primary elements of this activity are controlling access to information, and collecting, updating, analyzing, providing, and disposing of information. This activity excludes tasks performed in other activities which create information as an inherent part of that task.

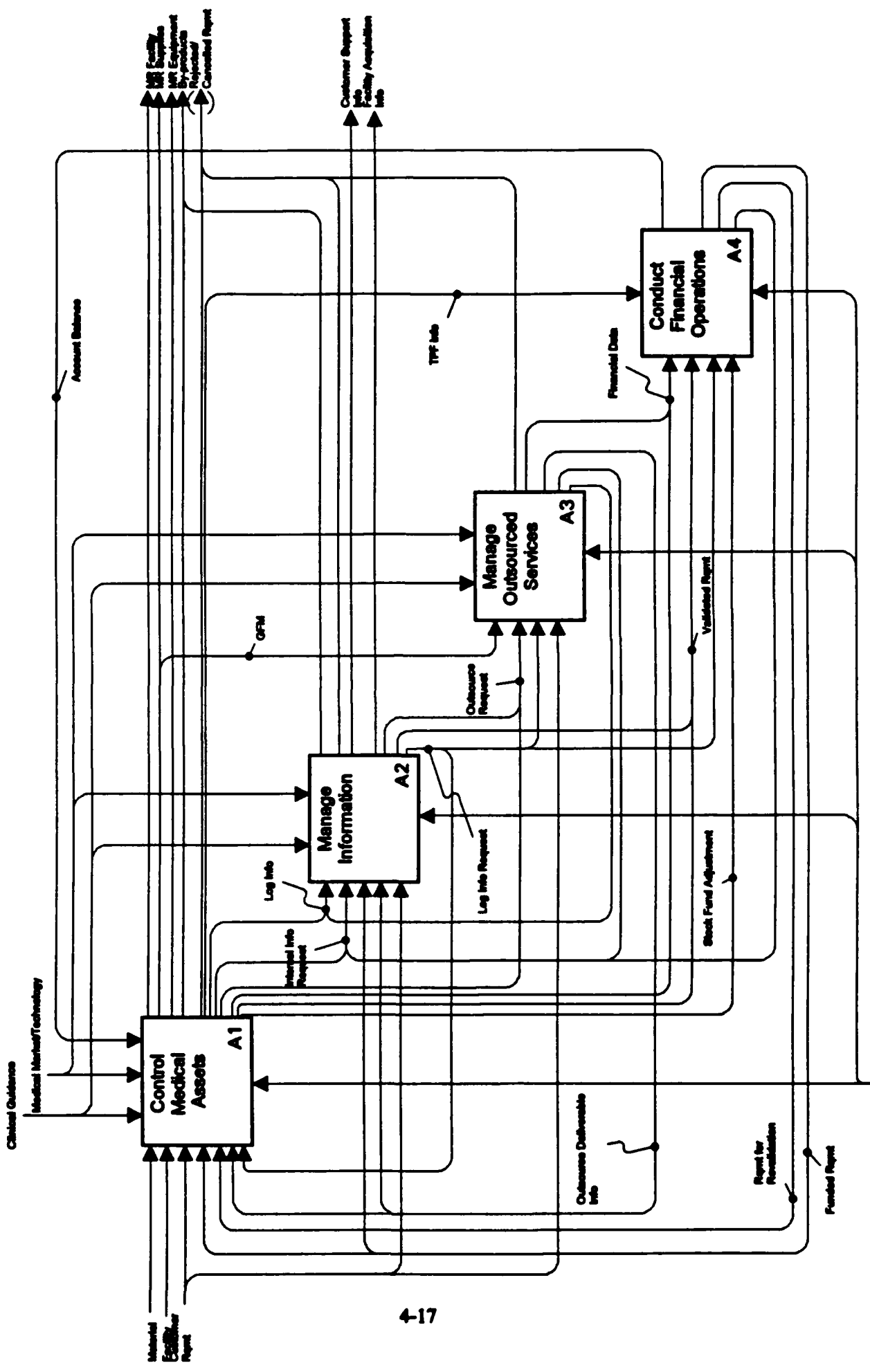
A3 Manage Outsourced Services

The primary elements in this activity are reviewing the Medical Logistics organization's internal capability, determining alternate outsource options, performing outsource options, and administering outsourced services. The acquisition of an outsource service is initiated by a customer requirement that has been reviewed and determined to be outside the capability of Medical Logistics. This could include submitting a request for contractual procurement to an outside contracting organization, submitting a requisition to the supply system, requesting services under a Memorandum of Understanding (MOU) with another military organization or Service, or awarding orders to vendors (when authorized) under existing delivery order contracts. An internal evaluation is maintained on the performance and execution of outsource services for future use in requesting additional service.

A4 Conduct Financial Operations

Conduct Financial Operations utilizes the Planning, Programming, and Budgeting System (PPBS) to budget and obtain financial resources to provide Medical Logistics support. The process includes ensuring that adequate funds are forecasted, requested, distributed, and administered throughout each of the logistics functional areas in support of the MHSS mission. It also includes processing of financial data transactions throughout these activities and through the financial systems of the Services.

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A11 Manage Medical Supplies

Manage Medical Supplies monitors the entire life cycle of supplies, including determining requirements; acquiring, controlling, distributing, and disposing of supplies; and providing financial tracking to maintain supplies in a mission-ready status available to satisfy customer needs. Medical supplies are primarily consumable and durable medical, dental, optical, and repair part items. Also included in this category are: subsistence items (except for the Army) and nonmedical supplies necessary to support the medical health care mission.

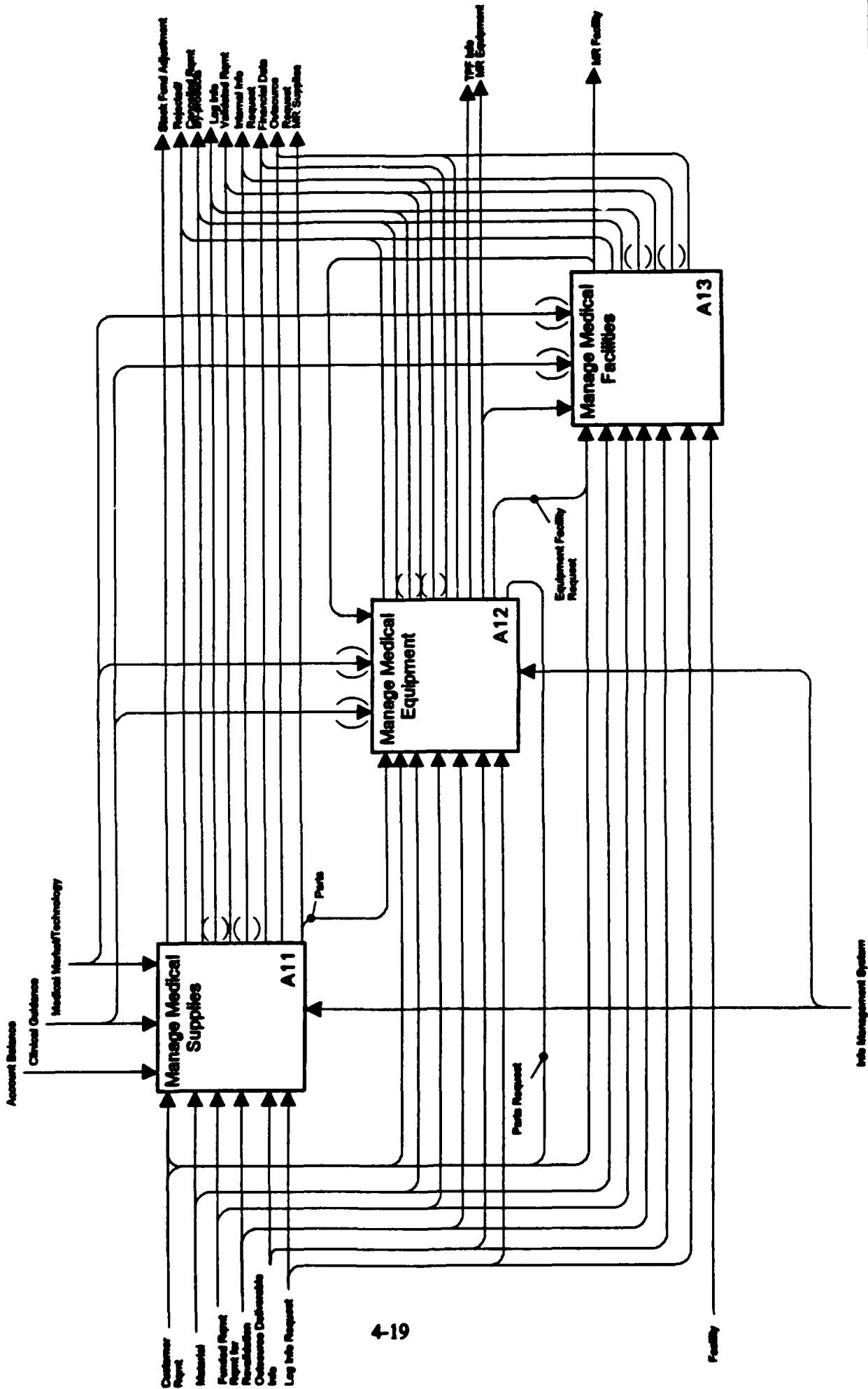
A12 Manage Medical Equipment

This activity assures the availability, reliability, sustainability, and readiness of equipment needed for the medical mission. Some of the processes incorporated in Manage Medical Equipment are identifying and reviewing requests, acquiring equipment, accounting for equipment, maintaining equipment, and redistributing or disposing of equipment. Equipment is ordered when specific requirements are identified, validated, approved, and funded. Periodic maintenance is performed to ensure equipment is maintained in a mission-ready condition and is made available to meet the customer needs.

A13 Manage Medical Facilities

This activity assures the availability, reliability, sustainability, and readiness of facilities needed to support the medical mission. The main activities of Manage Medical Facilities are assessing requirements, administering facility services, and maintaining the facility infrastructure. Periodic maintenance and repair schedules, minor construction, and operational programs are developed and executed to maintain mission-ready facilities in support of the medical mission.

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A111 Order Supplies

Order supplies is initiated as a result of receiving and processing a customer request. If the supply is not stocked locally, an order is processed to obtain the required supplies from sources outside the Medical Logistics organization (e.g., procurement from vendors, requisitions to the wholesale supply system). Orders include the Medical Logistics organization requirements to replenish stock items. Outsource methods are monitored from the time of order until time of receipt.

A112 Receive Supplies

Receive Supplies verifies that supplies received match what was ordered, are in the correct quantity, and that all supplies are in serviceable condition. Financial information regarding received supplies is interfaced with the Services' materiel accounting systems. The supply items are then relocated to inventory or issued directly to the customer. Information regarding the receipt, inspection, and acceptance of supplies by the government initiates a financial trigger for payment when a bill is received and properly certified.

A113 Stock Supplies

The Stock Supplies function includes restocking inventories in logistics facility locations while adhering to storage space utilization principles. Supplies carried in inventory are maintained as mission-ready supplies. This process includes disposition of supplies that are not serviceable, are excess, or have exceeded their potency date.

A114 Issue Supplies

This process issues ordered supplies and delivers them to the customer site or facilitates pickup by the customer from the warehouse. Issued supplies may consist of items drawn from stock or items not carried as stocked items but ordered on a Direct Turn Over (DTO) basis and delivered directly to the customer. The process includes monitoring due-outs.

A1111 Process Customer Request

This activity includes assisting the customer, validating the customer's request, checking the availability of customer funds, validating customer authorization, verifying the existence of a National Stock Number (NSN), validating the item (e.g., unit of issue, quantity, and nomenclature), and forwarding the request to the next level. If the customer requirements are found to be incomplete in any of the above steps, they may be corrected, rejected, or cancelled.

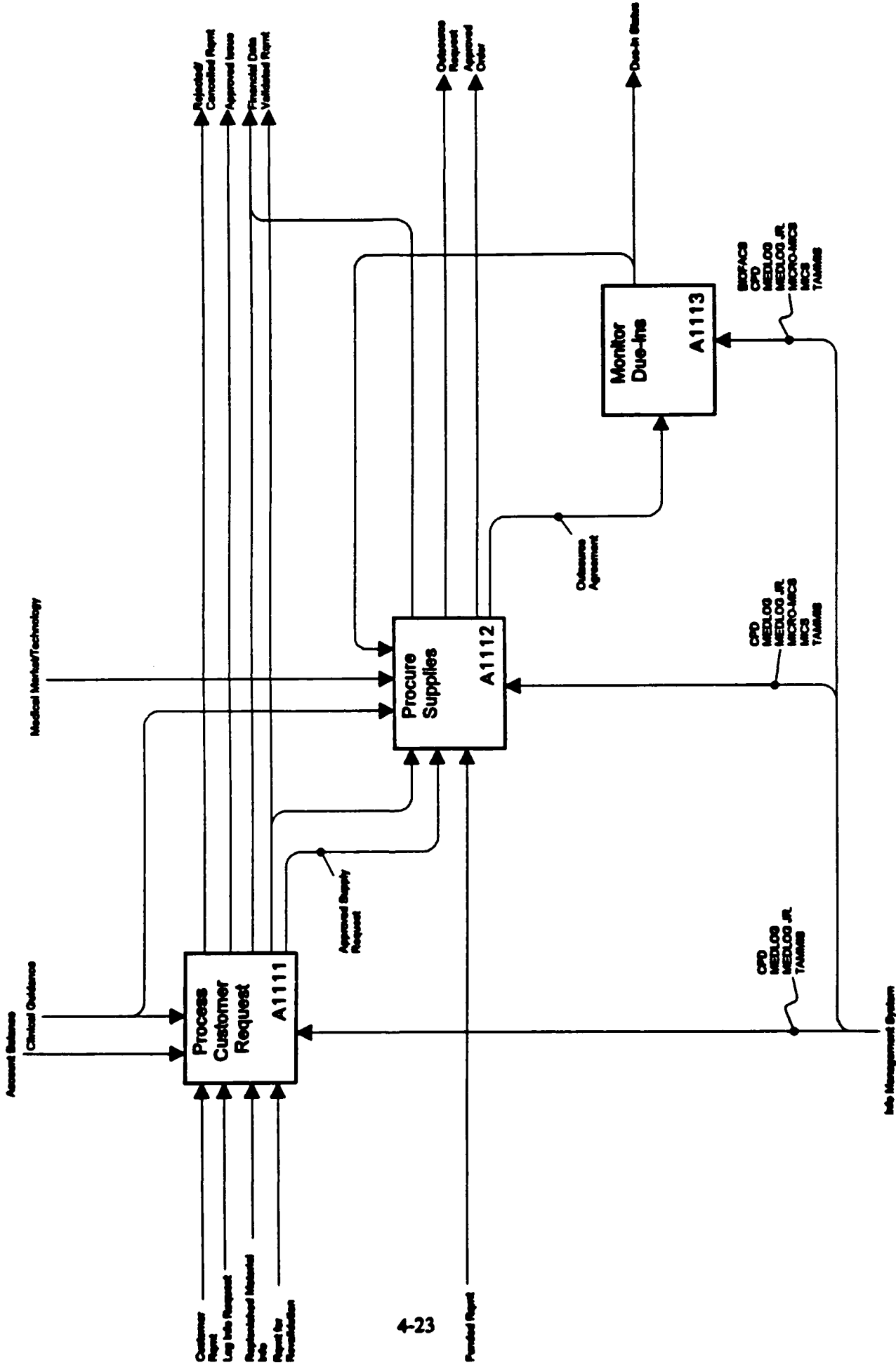
A1112 Procure Supplies

Upon receipt of a funded requirement or an approved supply request, an order may be forwarded to the wholesale supply system or to commercial vendors to obtain the supplies. This action will result in an outsource request or the use of an existing outsource agreement to order the supplies.

A1113 Monitor Due-Ins

This activity monitors status, performs follow-ups, or expedites actions as a result of a changing urgency of need. This activity includes comparing the quantity on order to the total quantity required, ensuring the quantity is adequate, and providing for timely receipt. Tracking of critical and mission essential items may require extraordinary expediting action to raise the priority designator, order an emergency quantity, cancel and reorder via an alternative source, or contact vendors, shipping points, and transportation carriers to manually trace materiel until it is delivered.

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NODE: A111	TITLE: Order Supplies	NUMBER:
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A1131 Determine Stock Level Requirements

Computation of the stock item requirement levels is based on the evaluation of historical demand data for each item, forecasted requirements, administrative and procurement lead time, cost, source of supply, returns, economic order quantities, and disposal data. Also included are special requirements for medical War Reserve Materiel (WRM). This information is computed through a formula to determine reorder point, safety level, and requisitioning objective for each stocked item carried in inventory.

A1132 Assure Quality Product

This process is the management of inventory items to ensure that quality standards are maintained. This includes management of the shelf life program; timely rotation of stock to ensure supplies are issued on a first in/first out basis within potency expiration dates; managing safety and hazardous materiel programs (such as ensuring that Materiel Safety Data Sheets (MSDS) are identified and available for hazardous items); ensuring materiel is properly stored, maintained, and secured; identifying item recall notices; and initiating disposal actions.

A1133 Redistribute/Dispose Supplies

Redistribute/Dispose Supplies identifies items that are excess to requirements. Excess items may include supplies in the customer's possession, kept in unofficial inventories, and turned in for credit or redistribution. This activity manages the reporting of excess stocked items to the applicable wholesale system inventory manager and arranges for its redistribution, transfer, and return. The process also identifies items that are obsolete, unserviceable, or condemned to be transferred to a Defense Reutilization and Marketing Office (DRMO) for redistribution, sale, disposal, or destruction.

A1141 Monitor Due-outs

Monitor Due-outs manages customer issues placed on backorder as a result of not having an adequate quantity of supplies available in inventory to satisfy the total requirement. While awaiting the receipt of supplies ordered for replenishment, these backorders are verified as valid requirements and tracked through the acquisition process. These tracking actions may involve upgrading the priority designator of the stock replenishment order or initiating aggressive follow-up action with the source of supply to expedite delivery based upon the urgency of the customer requirements. Upon receipt of these supplies, backorders are released and issued directly to the customer.

A1142 Pick Issues

The goal of Pick Issues is to locate supplies which have received proper authority for release and are available for issue. Upon locating these items, the approved quantity of mission-ready supplies are drawn, quality assurance information is verified, and the items are forwarded for delivery to the customer. If the required quantity of mission-ready supplies is unavailable from stock, a warehouse refusal action is processed and sent to stock control to reconcile the discrepancy and take appropriate action.

A1143 Arrange Outshipment

Planning for the proper packaging and arranging transportation for mission-ready supplies may be as simple as placing supplies on a cart, or as complex as packing, crating, and arranging shipment. The packaging method is determined by the delivery location. Once packaged, the mission-ready supplies are staged in a logistics facility pending transportation arrangements. Obtaining transportation may involve sending an individual to the customer location or arranging for external delivery services.

A1144 Deliver Supplies

Upon receipt of items prepared for shipping, the items are physically transferred to the customer in accordance with the pre-arranged shipping specifications. This may require proof of receipt and/or obtaining the signatures of authorized personnel for controlled supply items. If the customer is supported by forward logistics, the mission-ready supplies may be arranged on the customer's shelves by Medical Logistics personnel.

A121 Identify/Review Requirements

Identify/Review Requirements assesses customer requests for equipment resources. Several of the primary elements in this activity are receiving customer requests for equipment, maintenance, and/or disposal; assisting customers with development of requirements; assuring that items are properly identified and justified; performing a technical review of requirements; validating estimated acquisition costs; determining whether excess assets are available to satisfy the requirement; consolidating requirements packages for submission to the Equipment Review Committee or approval authority for prioritization and funding authorization; identifying that requirements for TPF are identified and programmed; and establishing and integrating recommended priorities for acquisition in the event of insufficient funding.

A122 Acquire Equipment

This process includes the acquisition of validated funded equipment requirements to the point of delivery of the equipment. The key elements in this process are the aggregation of funded requirements, selection of acquisition strategy, preparation of supporting documentation (e.g., specifications, performance evaluations), and monitoring of the procurement action status through completion of physical delivery at the destination. When necessary, the acquisition of equipment also includes coordination of related requirements such as facility site preparation, installation of equipment, personnel training, and coordinating for initial acceptance inspections.

A123 Account for Equipment

This activity documents equipment assets, and properly identifies, safeguards, and assesses visibility of equipment. Property custodians are assigned to custodial accounts upon issue of equipment. Appropriate property tags are affixed to each equipment item. This process also involves recording changes in equipment balances on the official property accounting records. Changes may result from equipment issues and transfers among equipment custodial accounts. Accounting records are also maintained to reflect equipment items on loan and those available for loan. Property control numbers are assigned during the issue process for individual identification of each item of equipment. Property control numbers are also used to update custodial and maintenance records.

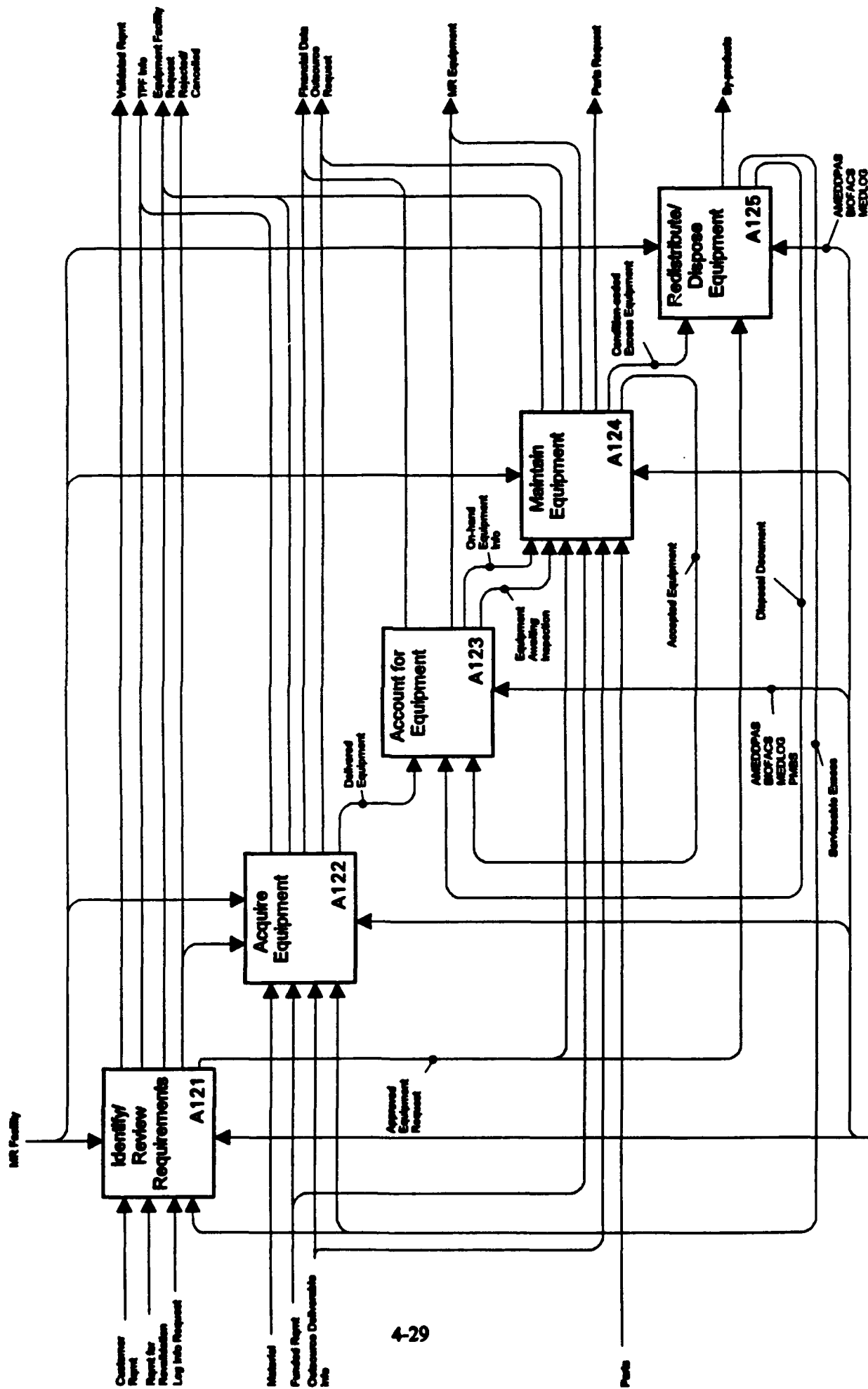
A124 Maintain Equipment

Sustainment of equipment in a mission-ready posture incorporates the following factors: coordinating for the installation of the equipment; performing or arranging for the inspection, repair, and calibration of equipment; training users in safe and effective equipment operation; analyzing and reporting occurrences of hazardous incidents connected with the use of equipment; communicating, correcting and documenting action on product recalls and hazard alerts affecting equipment; and archiving historical maintenance records.

A125 Redistribute/Dispose Equipment

This activity identifies and reports serviceable and unserviceable excess equipment, determines condition code, and determines and executes the appropriate disposition action. This process may involve redistribution and shipment of excess assets to another organization, or submission of these assets to a DRMO for further redistribution, sale, or disposal.

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A1211 Assist the Customer

Helping the customer submit a complete equipment requirement package is the key element within Assist the Customer. This includes the submission of all proper documentation required by local procedures and higher authority. Other elements involved are the coordination with sources inside and outside the medical treatment facility, and research and identification of fully justified requirements. Assistance may also be provided relating to a customer's request for maintenance, redistribution, or disposal of equipment. Once a customer's requirement has been fully identified, it is submitted as a requirements package for evaluation and further review.

A1212 Evaluate Requirements

This activity evaluates the customer requirements package to assess proper justification, additional manpower resources, spare part support, maintenance capability, consumable supplies, and any facility alterations and applicable costs required to make the equipment operational. An additional consideration is to determine if existing excess serviceable assets are available for redistribution to satisfy a requirement.

A1213 Document Priorities

This activity documents and provides the supporting paperwork for the recommended prioritization of reviewed customer requirements packages. The prioritization process is influenced by several factors including mission criticality, urgency of need, total cost, and existing equipment maintenance history, condition, and age. These prioritized requirements packages are then submitted for approval and funding using operating targets or other procurement allocations.

A1214 Obtain Approval

This activity obtains the required final approval for acquisition from local and higher authority, based on the dollar value of the equipment from the DoD, Service, and local procedures and policies. Further constraints on the acquisition of these prioritized requirements are the availability and authorization of sufficient funding. Acquisitions over \$1,000,000 include submission for approval at the DoD(HA) level and coordination at the regional level.

A1221 Determine Acquisition Strategy

This activity involves consolidating equipment requirements (e.g., DoD Shared Procurement Program), ensuring that the acquisition package is fully funded and complete for submission to the ordering activity, and ensuring that associated TPF resources are incorporated in the acquisition planning strategy. This activity results in an outsource request.

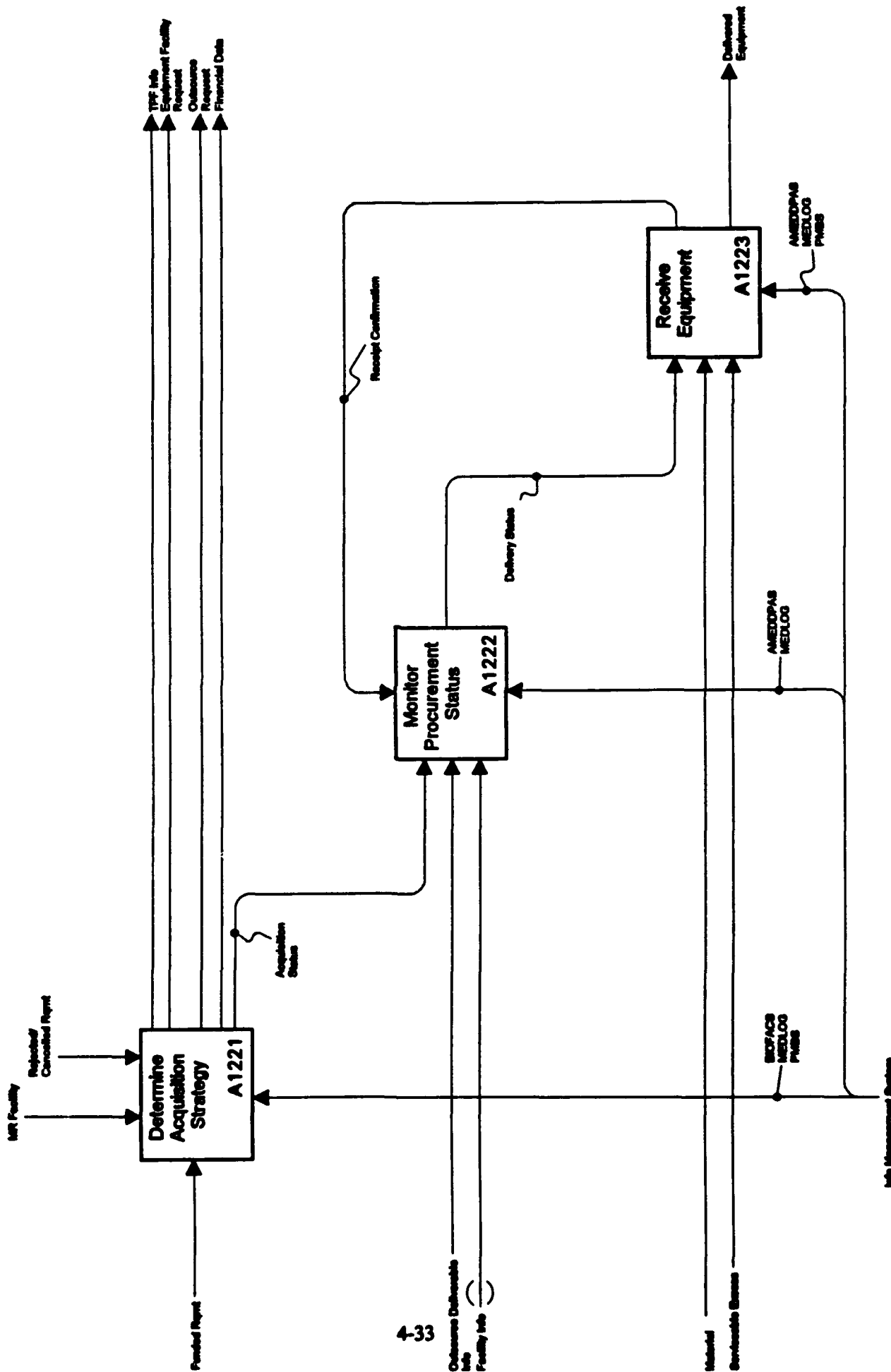
A1222 Monitor Procurement Status

Monitor Procurement Status reviews the acquisition status of ordered equipment and associated TPF resources. The main elements involved are periodic follow-up with the ordering organization and coordination for delivery and installation of equipment.

A1223 Receive Equipment

The activity of Receive Equipment spans the period from the time the equipment arrives until property accounting records are initiated. The received equipment may have originated from outsource agreements or redistribution of existing assets. When equipment is received the shipping manifest document must be verified for accuracy.

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A1241 Perform Initial Inspection

Upon receipt of equipment into the medical system, the following activities occur under Perform Initial Inspection: performance of safety inspection checks, performance of operational checks of equipment, calibration of the equipment, establishment of equipment maintenance records in the equipment database, and verification that the items received match specifications in the procurement document.

A1242 Perform Preventive Maintenance

This activity involves conducting scheduled maintenance required to maintain equipment in a mission-ready status. This incorporates performing regular systematic servicing, parts replacement, safety testing, performance testing, calibration checks, minor repairs, cleaning, detection of potential equipment malfunctions, and recording these maintenance actions in an equipment maintenance history record.

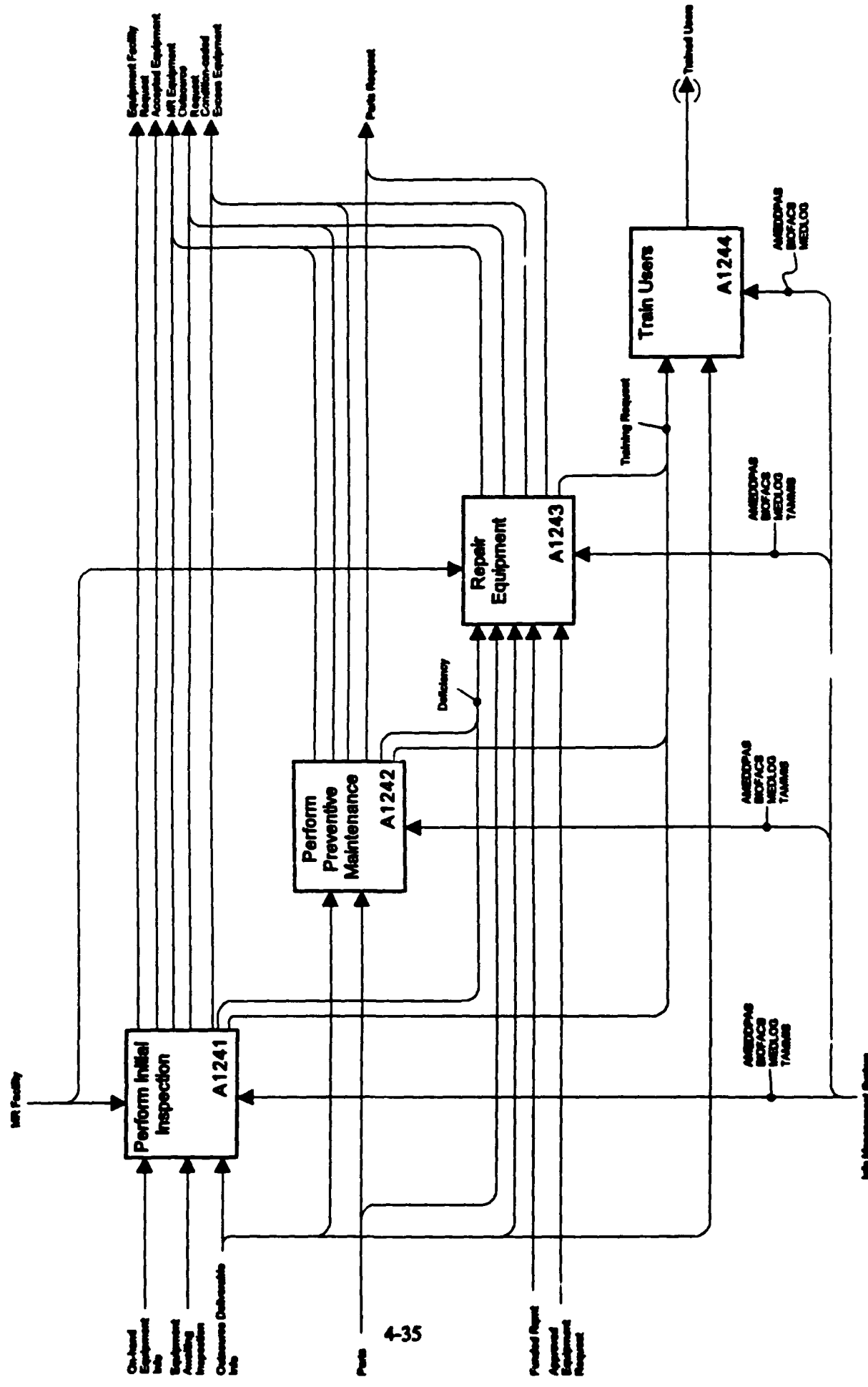
A1243 Repair Equipment

This function entails conducting equipment repairs as a result of deficiencies noted during scheduled preventive maintenance or unscheduled maintenance action requested by an equipment user. The repair action will produce safe, usable, and mission-ready equipment. When determining the practicality of repair, factors such as age, item type, projected life expectancy, replacement cost, obsolescence, past repair history, repair cost, and urgency of need are considered.

A1244 Train Users

Train Users is the activity of arranging equipment training for customers and biomedical equipment repair personnel.

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A131 Assess Requirements

Assess Requirements evaluates customer requests for facility resources. This includes, but is not limited to: space utilization, fire and safety codes, new equipment requirements, work descriptions and justifications, and project development. The overall strategic facility planning process is a critical element in assessing requirements.

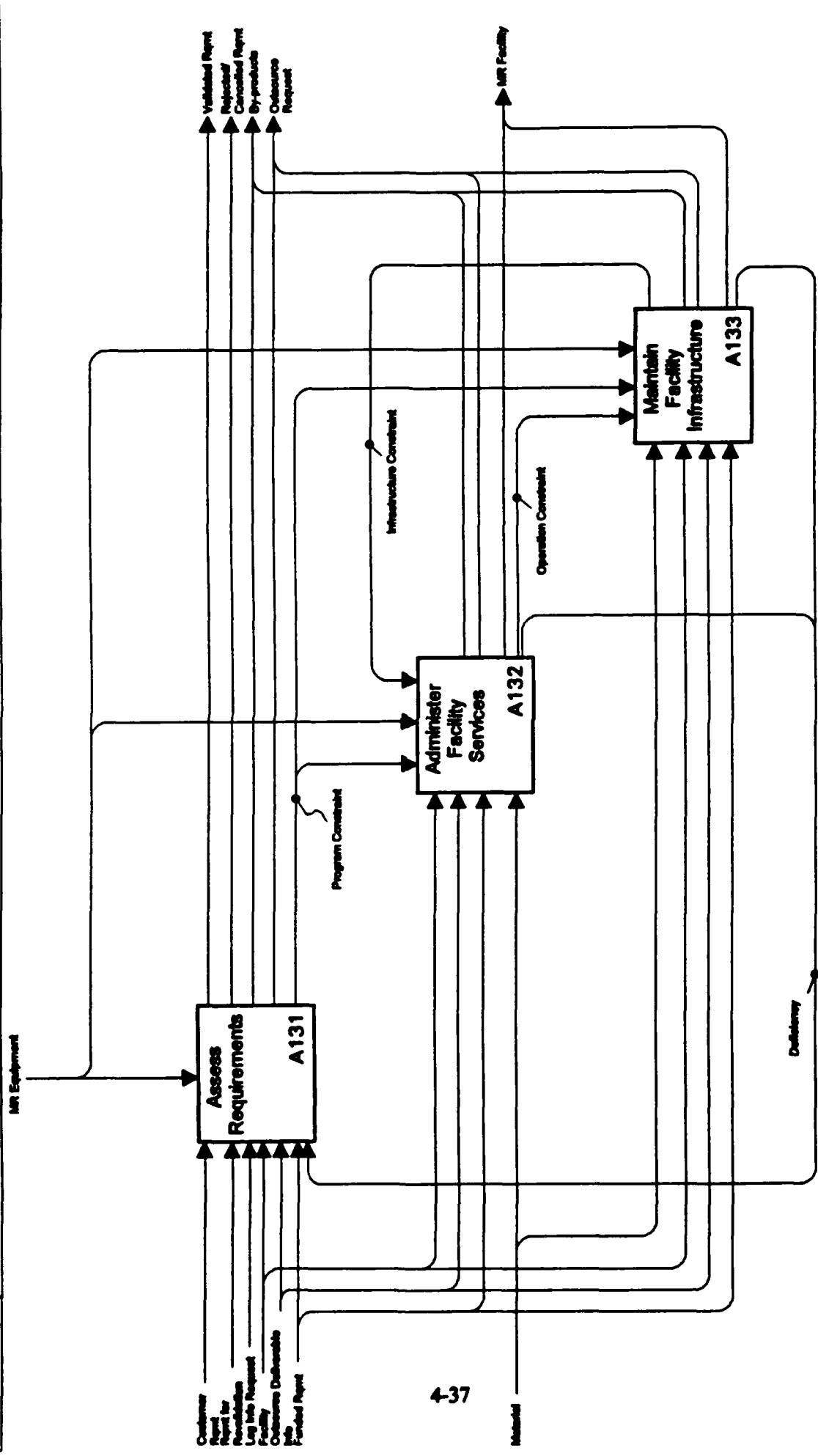
A132 Administer Facility Services

This activity conducts and monitors building operations such as quality control inspections, drills, compliance with existing policies and directives, and employee training. This includes compilation of records and transitional requirements necessary to maintain a mission-ready facility and related support facilities. Several key programs include safety, fire prevention, waste management, security, key control, transportation, precious metal recovery, linen management, facility transition, and housekeeping management.

A133 Maintain Facility Infrastructure

The sustainment of a facility infrastructure in a mission-ready posture involves several factors. These factors include managing preventive maintenance programs, performing minor construction and repair, maintaining building and grounds, and managing building systems and utilities distribution.

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A1311 Arrange Requirements

This is an evaluation process to determine appropriate channels to satisfy requirements. The evaluation process also includes verifying the project descriptions. A need may arise that can be satisfied internally, or it may require the development of an alternative solution, such as developing a project that may require funding beyond an organization's obligation authority.

A1312 Develop Projects

This activity develops, evaluates, approves, and refines project alternatives. Projects may encompass facility renovations, alterations, and TPF support for equipment acquisitions.

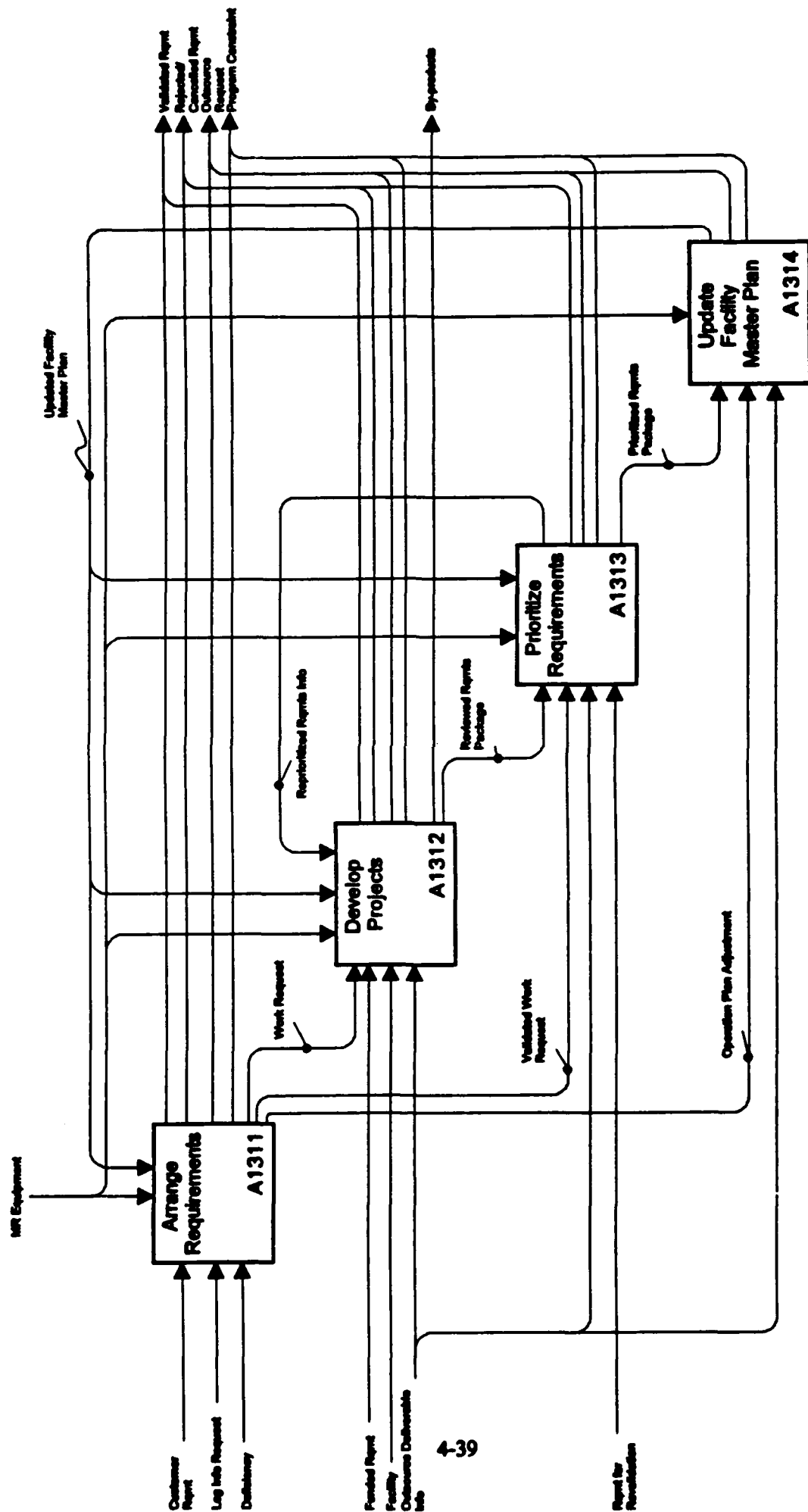
A1313 Prioritize Requirements

This activity establishes a priority list of approved projects based on the ability to perform the task and support the mission. The end result is either a requirement package with a priority designation, or a rejected requirement.

A1314 Update Facility Master Plan

↑ ∞ This activity requires the continuous update of programs, long range plans, local master plans, goals, and objectives based on changed or completed requirements in order to maintain a current facility master plan.

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A13121 Develop Alternatives

This activity generates and records alternatives for a project by analyzing its impact on the medical community. Factors in this process are assessing functionality; expanding existing spaces; acquiring space and services from an outside source; and evaluating interior design, signage, and communication systems.

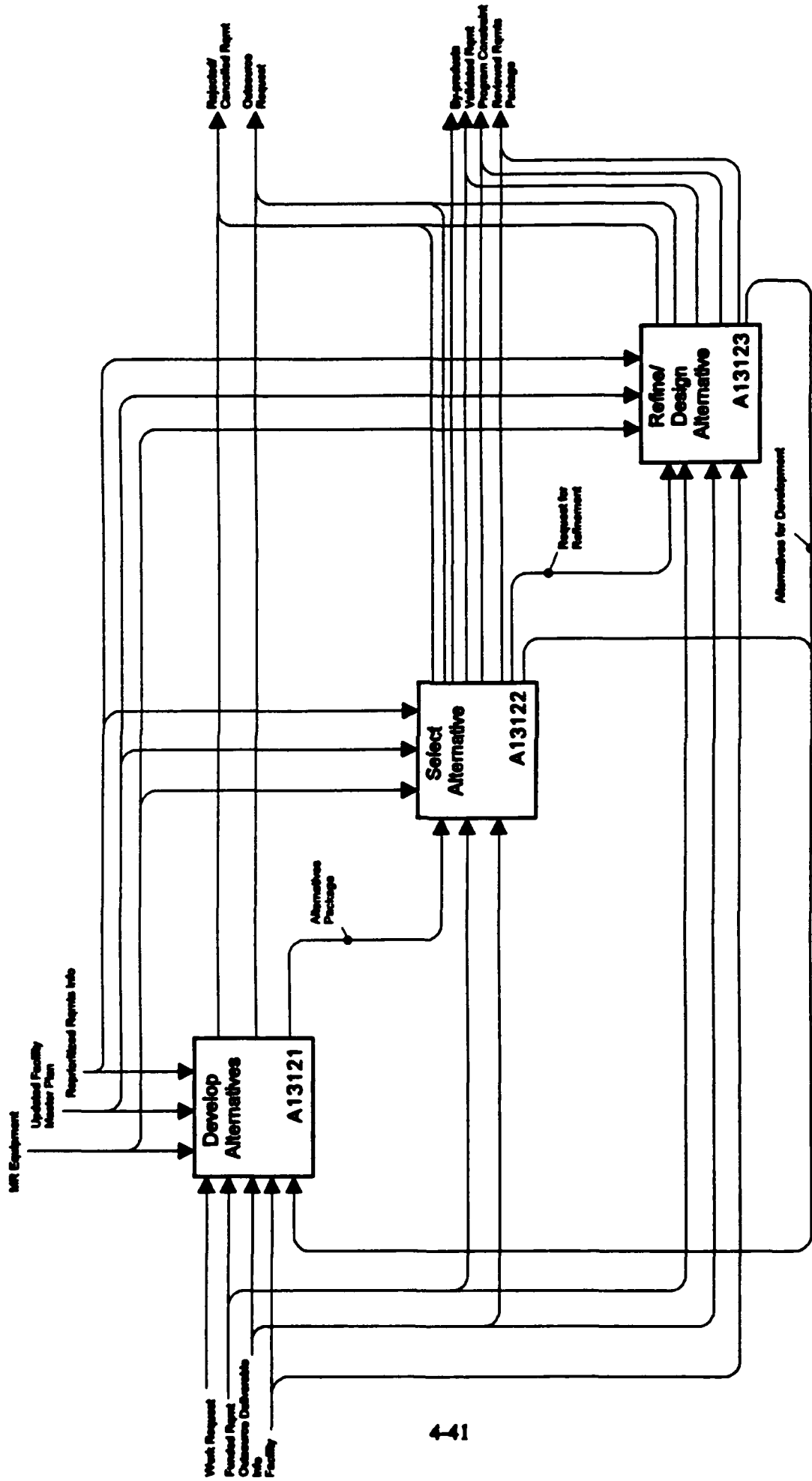
A13122 Select Alternative

This is the evaluation of each alternative package submitted for approval, using criteria such as the available resources, mission disruption, feasibility of execution, and prior commitments. The approved alternatives result in facilities requirements that are to be submitted for prioritization and funding. The remaining alternatives may be further refined, developed, or rejected.

A13123 Refine/Design Alternative

This activity creates technical design specifications, validates the scope, defines criteria and changes which may affect the existing alternatives. The approved alternative results in facility requirements being submitted for prioritization and funding. The remaining alternatives may be further developed or rejected.

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A1321 Program Activity Services

The primary elements in Program Activity Services involve programming, resourcing, and administering the existing support services and implementing their respective programs, (e.g., safety, fire prevention, waste management, security, key control, transportation, precious metal recovery, linen management, facility transition, and housekeeping management).

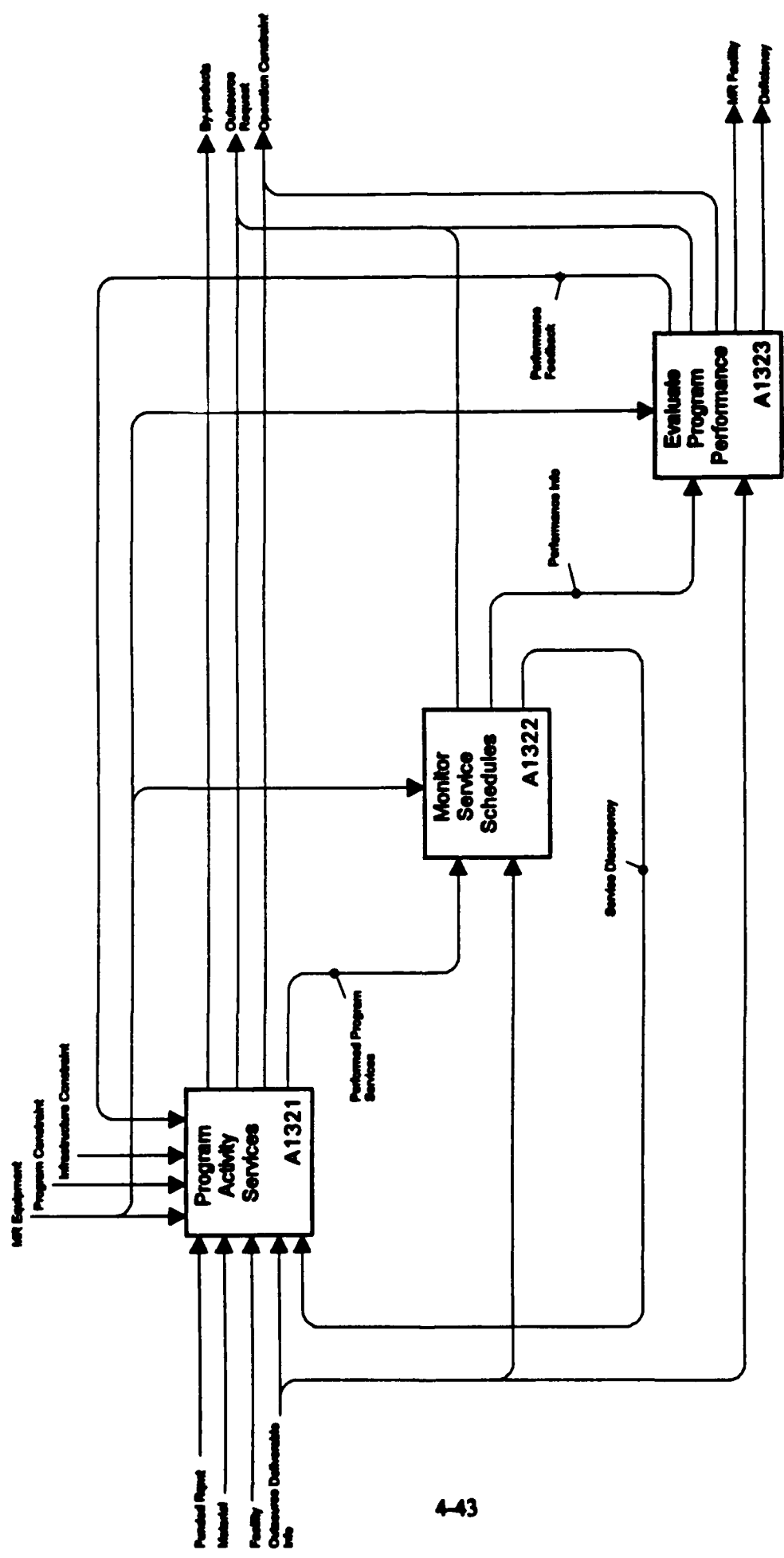
A1322 Monitor Service Schedules

This activity observes and documents the support service programs to ensure the organization's compliance with all the required performance and regulatory criteria for drills, inspections, tests, cleaning, reports, and disposal. All references to unsatisfactory service performance or delayed work schedules should be documented and corrective actions taken.

A1323 Evaluate Program Performance

This function compares the level of performance for all support services against acceptable standards for maintaining a mission-ready facility and updating programs as required. Facilities with noted deficiencies are further assessed and corrective actions taken as required. These support service evaluations will be referred to when processing new requirements or renewing existing service contracts.

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A1331 Manage Building Systems

This activity manages the provision of utilities and building systems and their distribution (e.g., heating, ventilation, and air conditioning (HVAC), plumbing, lighting, electrical, emergency systems, fire alarms, water, sewer, and gases) to maintain a mission-ready facility. This activity includes programming, reporting, and resourcing. A designated plan of maintenance is generated for building systems components. Work orders are generated for system breakdowns or failures between scheduled maintenance periods.

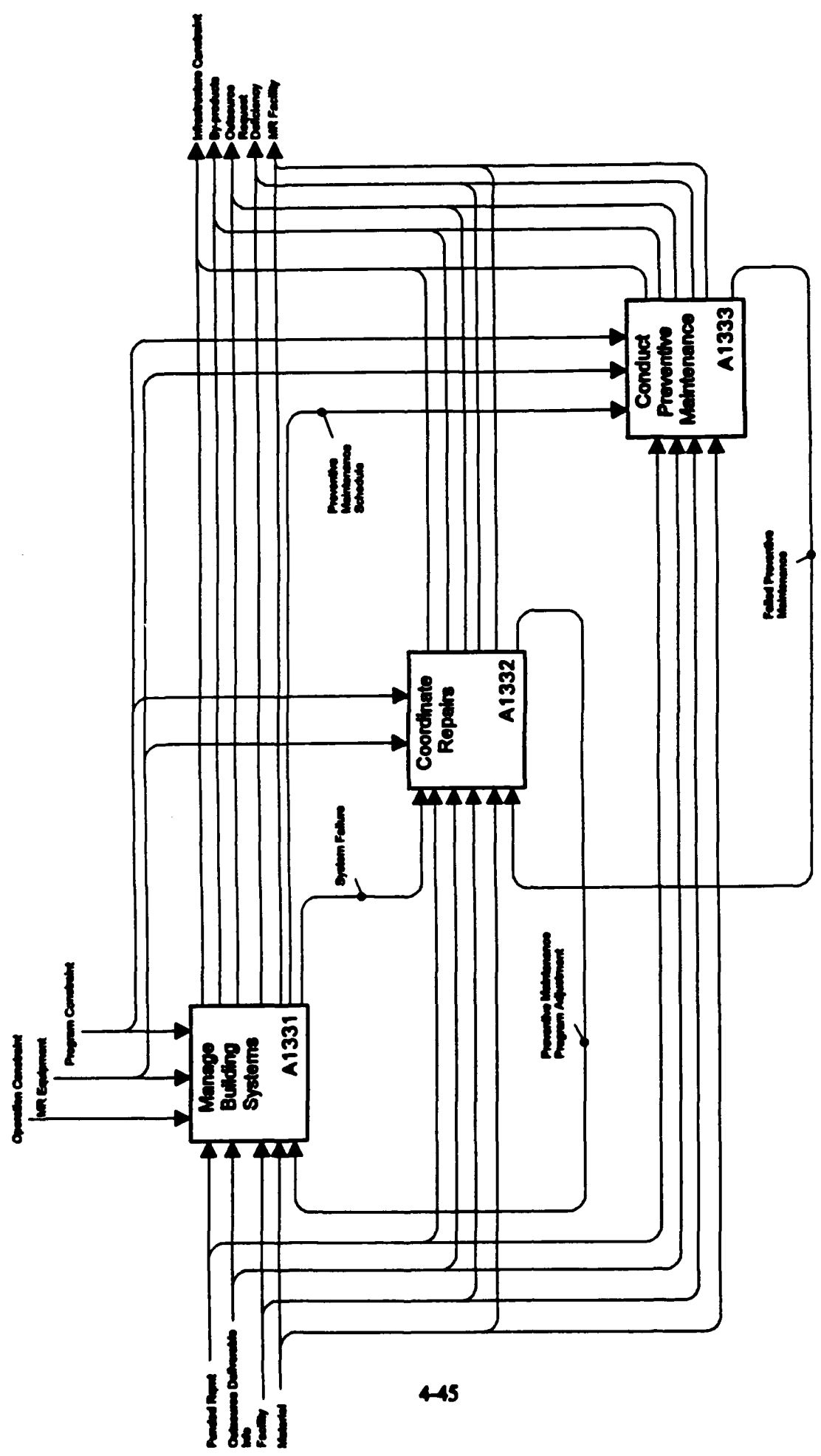
A1332 Coordinate Repairs

This activity coordinates repairs, minor construction projects, work orders, service orders, and other requirements involving time, money, and other facility services and operations to maintain a mission-ready facility. Repairs beyond the capability of in-house resources are performed on a request for outsource services within existing program and funding constraints.

A1333 Conduct Preventive Maintenance

This activity conducts scheduled preventive maintenance required to maintain facilities in a mission-ready status. The primary elements of this activity are scheduled services, parts replacement, safety testing, performance testing, calibration checks, minor repairs, cleaning, detection of potential equipment malfunctions, and recording of these maintenance actions as part of the facility maintenance history. Identified deficiencies are reported for appropriate corrective action.

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A21 Control Access

Control Access verifies whether a request for information violates security classifications or other restrictions to access. If the request is in violation of access rules, it is rejected. Validated requirements are further processed and information is produced.

A22 Collect/Update Information

Collect/Update Information coordinates the activities that gather and maintain current information in a usable format. This involves collecting and verifying the accuracy of information from internal and external sources. Catalog information is one type of information essential to providing Medical Logistics support.

A23 Analyze Information

Analyze Information deals with the research of updated information in order to ensure an accurate and appropriate response to a customer's needs. As information is transformed, it is sorted, collated, compared, validated, and calculated. This transformation results in assimilated information which is often new information and must be included in the update process. Outdated information is marked for updating, deletion, disposal, or destruction.

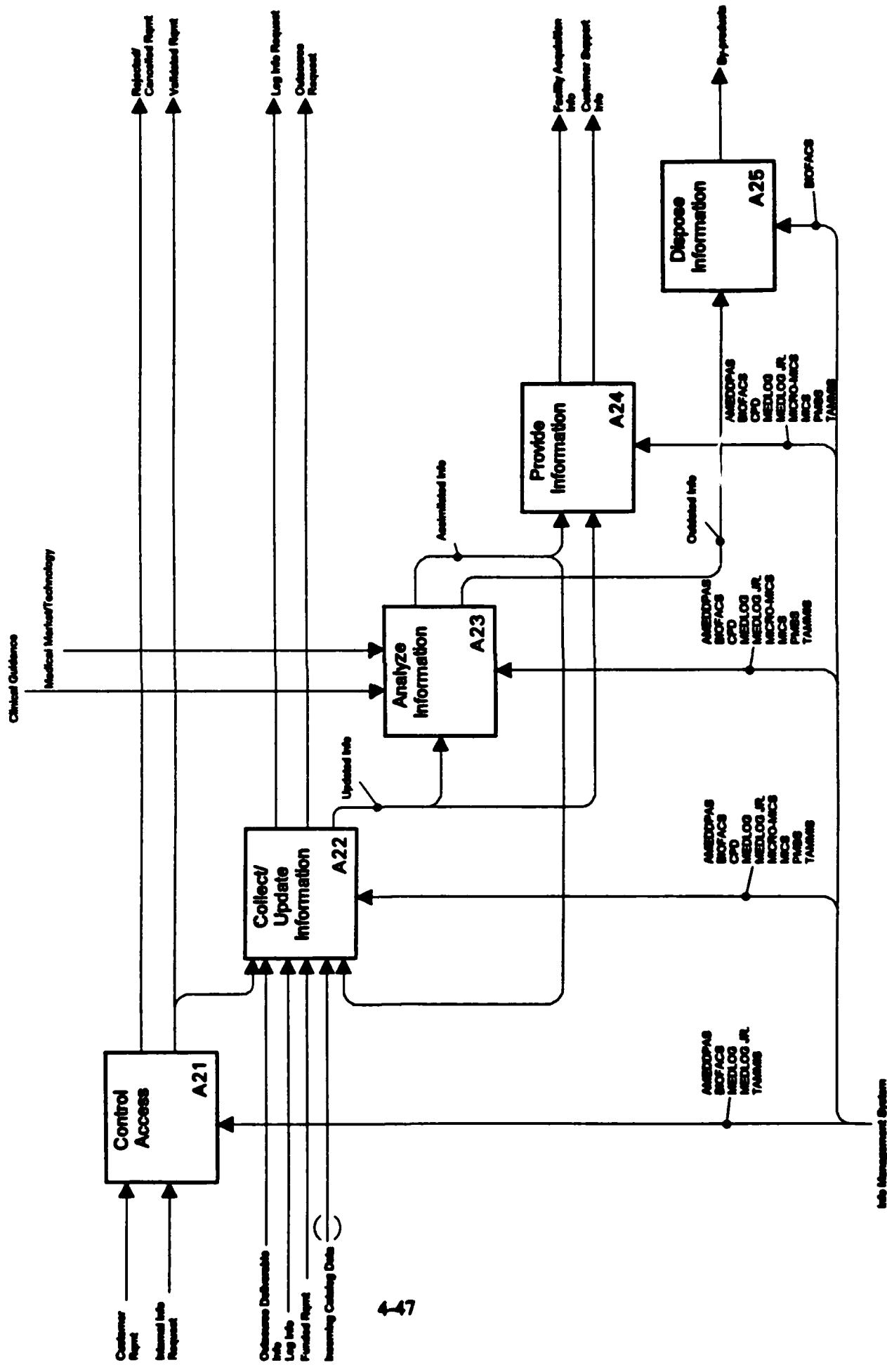
A24 Provide Information

Provide Information involves preparing a response to a request for information. Updated and assimilated information is packaged in a usable form to support the decision making process or to provide customer support information.

A25 Dispose Information

This activity eliminates outdated information in accordance with the federal records retention guidance and the *Defense Disposal Manual*.

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A31 Review Internal Capability

This activity evaluates the capabilities of Medical Logistics personnel and assets to determine whether the materiel, real property, or support services requested can be provided more effectively from within the organization. If these services can be provided internally, a request for outsource services becomes a rejected requirement.

A32 Determine Outsource Option

Determine Outsource Option involves selecting the best method and resources for acquiring materiel, real property, or services from an outside organization or agency (e.g., MOU, Inter-Service Support Agreement (ISSA), purchase order, or contract). The materiel or service requirement is formatted and submitted as a request for materiel, real property, or support services.

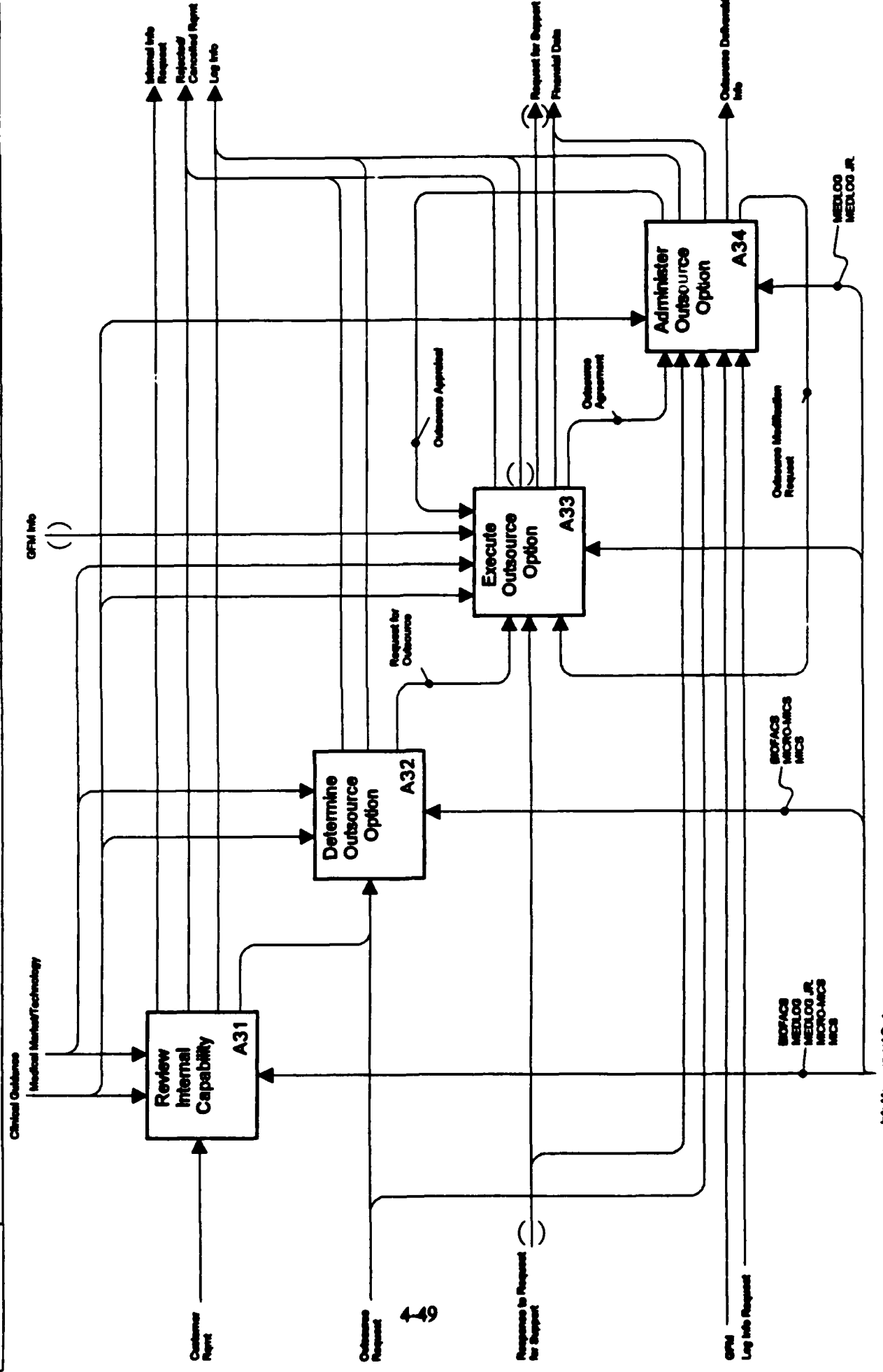
A33 Execute Outsource Option

This is the process of formalizing the selected outsource option. A request is produced for materiel, real property, or support services from an outside organization, agency, or contractor. Upon receipt of acknowledgement of the ability to provide the requested support services, an outsource agreement in the form of an MOU or ISSA may be negotiated and signed to obtain services. When the dollar value for the materiel, real property, or support services exceeds the local Medical Logistics purchase authority, requests for contractual procurement are forwarded to an outside organization. When this occurs, the outside contracting organization will perform the execution of an outsource option and contract for the materiel or services to be delivered.

A34 Administer Outsource Option

Elements in this activity include providing contracting officer representative oversight of deliverables (e.g., health care services, supplies, equipment, or real property) and the acceptance of deliverables upon completion. This process also includes placing delivery orders against a prenegotiated outsource agreement (e.g., Blanket Purchase Agreement (BPA) indefinite delivery order contracts, Federal Supply Services (FSS) contracts, Emergency Service Agreement, or Maintenance Service Agreement).

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NODE: A3	TITLE: Manage Outsourced Services	NUMBER:
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A331 Complete Outsource Package

This is the process of completing all required forms and justifications for submission to an outside organization or agency. Completion of performance work statements, statements of work, and sole source justifications are examples of documents which are prepared to accomplish this activity.

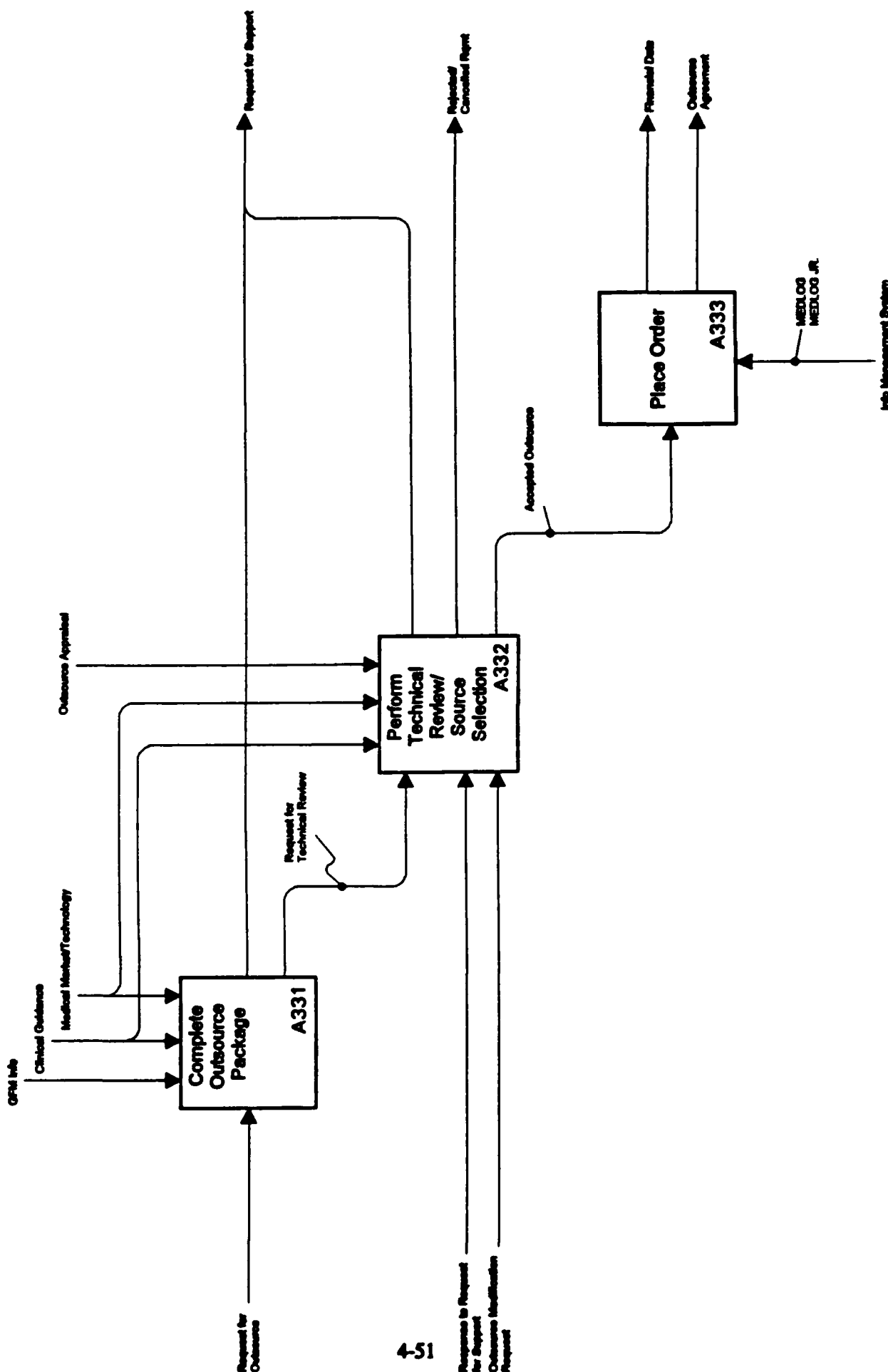
A332 Perform Technical Review/Source Selection

This is the process of evaluating technical characteristics, cost, and the ability to perform and deliver goods or services. This includes performing technical evaluations of bids or requests for proposals, or participating in the source selection process when requested by the contracting organization.

A333 Place Order

Upon receipt of an accepted outsource, this activity creates an obligation to obtain the required materiel, real property, or services. The selected outsource may be other government organizations, agencies, vendors, or other external sources.

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A41 Request Funds

This activity involves determining, justifying, and submitting funding resource requirements within the DoD PPBS process. To determine funding requirements individual needs are added in like accounting classifications or appropriations. Justification is a narrative description to support the total requirement in each accounting classification. These requirements are then submitted through the appropriate comptroller channels. Requested funds may consist of Operations and Maintenance (O&M) funds (including Real Property Maintenance Activity (RPMA) fund); stock fund authorizations; and Military Pay, Other Procurement, and Military Construction (MILCON) appropriations.

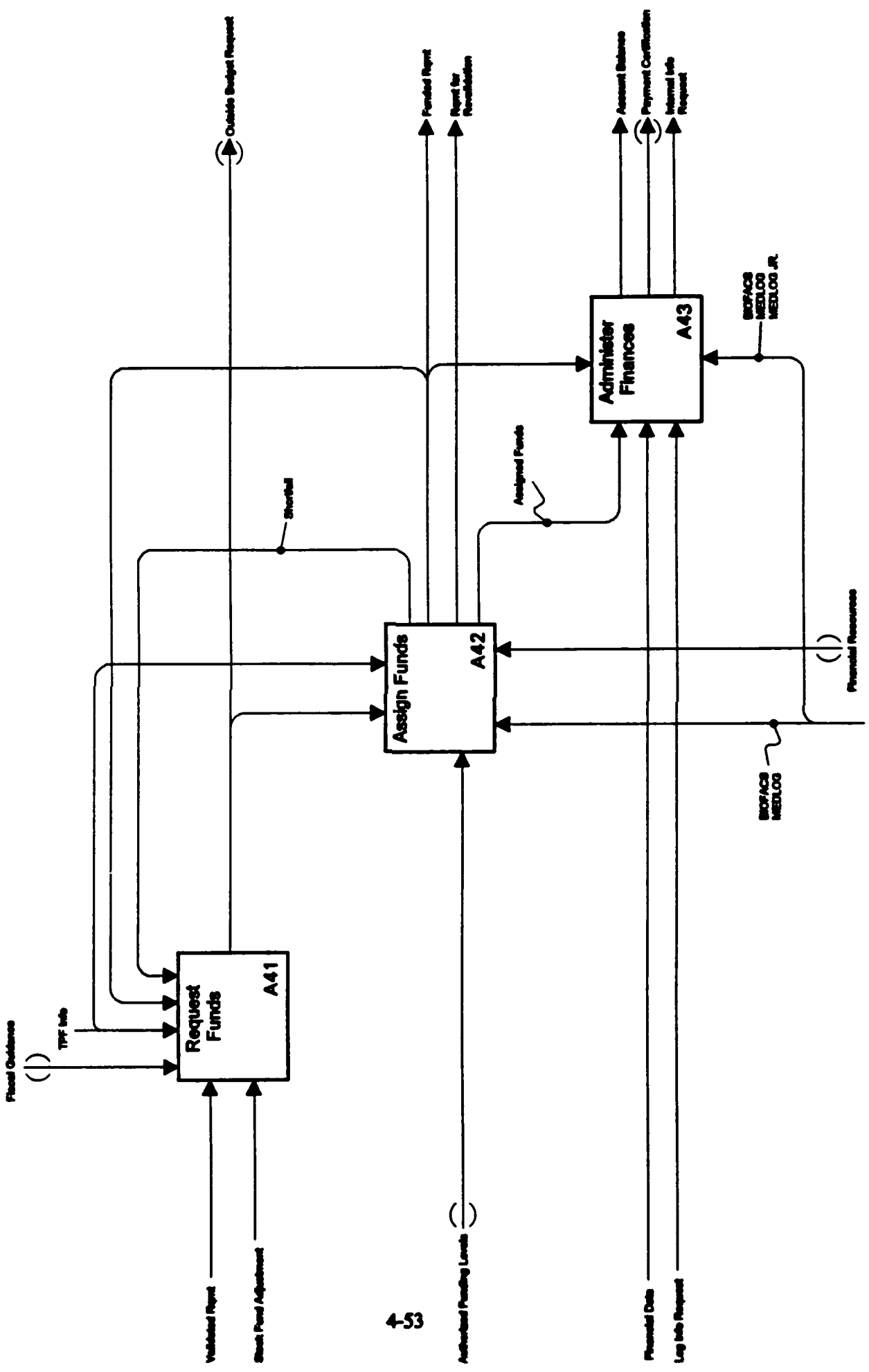
A42 Assign Funds

Once authorized funding levels are received from the comptroller, the approved funds are assigned to validated requirements in accordance with established priorities to produce funded requirements. If requirements are not funded, they must be revalidated and additional funds reprogrammed or requested.

A43 Administer Finances

Administer Finances includes managing fund authorizations, maintaining fund balances, and reporting financial transactions through the financial systems. Factors in this activity are providing financial information and reports to customers or higher echelons, performing internal financial processes, and processing financial paperwork transactions that trigger payments to be disbursed as a result of acquiring supplies, equipment, facilities, and services ordered, received, and accepted.

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Section 5

Data Models

5.1 Introduction to Data Models

A data model is a graphic representation of the data structure specific to a particular scope or segment of a business. Within the defined scope or business segment it captures the real or abstract entities, their characteristics or attributes, and their relationship to one another. Data entities, in a data model, are those classes of people, places, ideas, things, or events about which the business collects and records data. An entity is named using a noun or noun phrase and is illustrated by a box with the entity name outside and across the top of the box. The properties or characteristics that identify or characterize entities are called attributes. An attribute is a commonly recognized descriptor of all instances of an entity and has a specific value for the entity. The attribute or set of attributes that uniquely identifies an entity instance is termed the key, and the remaining attributes are referred to as non-key attributes. Keys are placed above the horizontal line within the entity box, while non-key attributes are placed below the line. The relationships that are inherent to the entities of a data model are shown as lines connecting the entity boxes that are named using a verb or verb phrase to describe the nature of the association. Cardinality of the relationship indicates how many instances of an entity can be related to instances of the other entity, and is represented by a dot at one or both ends of the relationship line. A detailed explanation of data modeling techniques is provided in Appendix G.

Depending on the level of detail applied, data models serve to establish a common understanding of the business rules, facilitate consistent communication of the business rules among components of the organization, and improve the quality of database design and other automation services. Data models are refined into three levels of detail:

- Entity-relationship
- Key-based
- Fully attributed

Entity-relationship Model

The most generalized level is the entity-relationship model which focuses on entities and their relationships. They characteristically represent a particular subject area with a larger scope and limited depth. Entity-relationship models are used in the planning stages to aid in defining and validating data requirements. They are useful in defining initial business statements that represent constraints in the environment, but do not provide a level of detail to allow precise statements about how an organization operates.

Key-based Model

A further refined entity-relationship model that adds unique identifiers to each entity is referred to as a key-based data model. The key-based data model provides a more precise representation of the data for a smaller scope of the subject area and in greater depth. These models are typically deliverables of a planning project in which enough data is analyzed to begin to plan implementation projects. They are used to define the scope of an implementation project, and to verify that data assets can be successfully integrated and reused.

Fully-attributed Model

The fully-attributed data model provides a solid foundation for database design and implementation. It contains all the key and non-key attributes characterizing the entities. The fully attributed model provides a stable, non-redundant, integrated view of data, and as such, is used in implementation projects in conjunction with previously developed activity models to develop transaction or operational requirements. Databases designed from this perspective tend to be more flexible and have lengthy life cycles because they are based on stable data structures rather than processes that frequently change.

5.2 Medical Logistics Data Model

The Medical Logistics data model represents the logical data entities and logical data flows of the Services' legacy systems and current business practices. Every unique feature of the legacy systems was identified and placed into the logical data model. Service functional representatives were in attendance to represent the legacy systems and to extract the necessary data hidden in the coding schemes of those systems. The data model was compared to the Defense Finance and Accounting Service (DFAS) and Joint Logistics System Command (JLSC) high-level data models and where possible was designed to conform to these existing entities. Volume II of this document contains the data model and definitions, business rules, and legacy system matrices.

Section 6

Activity Based Analysis

6.1 Overview

An analysis of Medical Logistics activities was conducted through the use of activity modeling. This analysis included applying baseline activity costs, establishing a foundation for performance measures, and identifying business process improvement opportunities. The recommendations resulting from this analysis are displayed in Section 7.

6.2 Activity Based Costing

Activity based costing, in conjunction with the IDEF modeling techniques, allows an organization or functional area to determine the cost of each element of service provided. This methodology is used to understand the current activities and related costs. Applying costs to activities establishes a picture of the current cost structure and provides a baseline for future analysis and comparison of business process improvements.

In the ABC process, the activities of an organization are clearly defined and broken down into sub-activities. This is completed through the IDEF modeling technique. Costs are then collected and applied to each specific activity. While the figures developed are for comparative analysis and represent only a rough order of magnitude, it is important to determine these costs to provide a logical basis for cost reduction recommendations. The ABC Group collected costs for five areas: personnel, materiel, facilities, information technology, and other. Appendix H contains the spreadsheets of the actual allocations and the aggregate costs for each category. As a basis for collecting these costs, the original Medical Logistics FEA¹ and FEA Update² were used as references. Each of the five areas are explained below, with exceptions noted when the FEA figures were modified.

Personnel

In establishing personnel costs, the ABC Group used the authorized allowance numbers found in the original FEA as a basis to build upon. The authorized numbers for the Air Force were received from the Manpower Branch and were calculated based on Air Force Specialty Codes (AFSCs). The authorized numbers for the Navy were received from the Bureau of Medicine and Surgery and were calculated based on the Billet Sequence Codes (BSCs). The Navy authorized numbers do not reflect the personnel employed in facility or operating management. The authorized numbers for the Army were received from the Manpower Branch and were calculated based on Specialty Skill Identifier (SSI) and Military Occupation Specialty (MOS) codes. The authorized numbers are shown in Figure 6-1.

¹ Corporate Information Management Medical Logistics Functional Economic Analysis, 5 June 1992: Appendix D.

² Medical Logistics Functional Economic Analysis (FEA) Update, January 1993: 9.

Service	Officers	Enlisted	Civilians
Army	547	2,536	2,179
Navy	70	762	667
Air Force	220	2,144	517

Figure 6-1. Authorized Personnel Levels

Composite labor rates were used to establish the costs for each category of personnel. Composite rates are comprehensive rates that include salary and benefits. It should be noted that the composite rate does not accurately reflect the cost for any individual Service; however, these costs represent an average for all the Services. These composite rates and sources are shown in Figure 6-2.

Category	Composite Rate	Source
Officers	\$74,943	Deputy Comptroller Memorandum dated September 29, 1992
Enlisted	\$31,810	
Civilians	\$42,190	Original FEA

Figure 6-2. Composite Rates

By multiplying the composite rates by the number of personnel, baseline personnel costs were established for each Service. These baseline costs are shown in Figure 6-3.

Service	Officers	Enlisted	Civilians	Total
Army	\$41.0	\$80.7	\$91.9	\$213.6
Navy	\$5.2	\$24.2	\$28.1	\$57.6
Air Force	\$16.5	\$68.2	\$21.8	\$106.5
Total	\$377.7			

Figures reflect dollars in millions.

Figure 6-3. Total Baseline Personnel Costs

The ABC Group and Data Modeling Group representatives from each Service distributed these costs among the activities by first looking at high-level activities and applying percentages to each level. The percentage of labor time was then further distributed among the lower level activities. Percentages of time are summarized in Figure 6-4.

Activity	Army			Navy			Air Force		
	O	E	C	O	E	C	O	E	C
A0 Provide Medical Logistics Support	100%	100%	100%	100%	100%	100%	100%	100%	100%
A1 Control Medical Assets	60%	84%	75%	35%	70%	65%	42%	82%	82%
A11 Manage Medical Supplies	33%	46%	48%	10%	30%	56%	3%	60%	60%
A12 Manage Medical Equipment	22%	29%	12%	25%	40%	9%	13%	18%	18%
A13 Manage Medical Facilities	5%	9%	15%	0%	0%	0%	26%	4%	4%
A2 Manage Information	23%	6%	10%	50%	20%	12%	48%	4%	4%
A3 Manage Outsourced Services	10%	5%	8%	10%	7%	20%	5%	12%	12%
A4 Conduct Financial Operations	7%	5%	7%	5%	3%	3%	5%	2%	2%
* No percentage was allocated to the activity Manage Medical Facilities because the authorized numbers do not reflect the personnel employed in facility or operating management.									
O = Officers E = Enlisted C = Civilians									

Figure 6-4. Summary of Distribution of Personnel Time

Materiel

Cost of materiel is composed of four categories: management and support, stock fund holding, replenishment, and transportation. Each of these categories is discussed below.

Management and Support Costs

The updated FEA depicts a figure of \$31.5 million for management and support. This figure represents the amount spent on materiel used by Medical Logistics personnel to support direct logistics tasks. This includes items such as pallet jacks, fork lifts, and office supplies. This figure was accepted by the ABC Group and allocated based on personnel distribution. The assumption was made that the more personnel time spent on an activity, the more materiel that would be used. Therefore, if 10 percent of total personnel costs were spent in the activity of A2 (Manage Information), 10 percent of the management and support figure would be applied to activity A2. Figures for a given year may be skewed when high cost equipment is purchased in addition to the normal expenditures for consumable supplies. Based on an analysis of business process improvements, this may not be the best methodology to allocate costs for alternatives. For example, if conveyance equipment is purchased to distribute materiel, this may increase materiel management and support cost and decrease personnel labor cost.

Stock Fund Holding Costs

The updated FEA depicts a figure of \$105.6 million for stock fund holding costs. This figure represents the amount spent by all the Services to hold operating materiel or inventories in

warehouses. This figure does not include the cost of war reserve materiel for the Services except for the Navy. The Navy included the cost of blood donor supplies in this figure. This figure is not divided equally among the three Services. The Air Force represents the greatest percentage of this figure because every Air Force supply request is processed through the stock fund account. In addition to the Army and Navy stock fund accounts, these two Services maintain operations and maintenance accounts for end use supplies. The figure of \$105.6 million does not include the operations and maintenance account expenses. In reviewing the activities, this entire figure was allocated to activity A113 (Stock Supplies).

Replenishment Costs

The updated FEA depicts a figure of \$1,646.2 million for replenishment costs. This figure represents the amount spent by the Services on materiel that is resold to the medical community and is based only on stock fund accounts, and does not include investment figures or maintenance and repair costs. An estimated \$42 million of the \$1.6 billion represents the expense equipment figure for the Air Force and an estimated \$90 million represents the expense equipment figure for the Army. The Navy expense equipment figure was not included in the replenishment figure. Based on this information, a total of \$132 million has been subtracted from the original FEA figure. This leaves approximately \$1.5 billion to be allocated among the activities for replenishment costs. The assumption used to identify business improvements is that the same products will be acquired in the same quantities. In reviewing the activities, this number was allocated to activity A11 (Manage Medical Supplies).

Transportation Costs

The updated FEA depicts a figure of \$4.5 million for transportation costs. This figure represents the amount spent by all the Services to move materiel from one place to another. This also includes the premium transportation costs (e.g., Federal Express). The original FEA figure was based on the documented cost for the Air Force. Based on the Air Force number, a ratio was applied to develop figures for the Army and Navy. In reviewing the activities, this number applies to two activities. These activities were identified as A11 (Manage Medical Supplies) and A12 (Manage Medical Equipment). Based on the knowledge of the ABC Group, ninety percent of these costs were allocated to A11 and ten percent were allocated to A12.

Facilities

The updated FEA depicts a figure of \$58.6 million for facility management costs. This figure only represents the amount spent by Services for management of facilities and spaces dedicated to Medical Logistics functions. In the original FEA, the Air Force and Navy used the Medical Expense and Performance Reporting System (MEPRS) data to identify these costs. The Army identified their cost by extrapolation based on the cost of the average Navy and Air Force facility. This facility figure includes the utilities, maintenance and repair, and housekeeping costs of all areas dedicated to Medical Logistics functions. This figure was allocated among the activities by the ABC Group based on their knowledge of the approximate square footage used for each activity. The percentage allocation of the facility figure is shown in Figure 6-5.

Activity		Percentage Allocated
A0	Perform Medical Logistics	100%
A1	Control Medical Assets	91%
A11	Manage Medical Supplies	72%
A12	Manage Medical Equipment	15%
A13	Manage Medical Facilities	4%
A2	Manage Information	2%
A3	Acquire/Manage Outsourced Services	6%
A4	Conduct Financial Operations	1%

Figure 6-5. Distribution of Facility Costs

Information Technology

The updated FEA depicts a figure of \$12.9 million for information technology. Based on interviews with the original FEA participants, this figure was based on the maintenance cost of Medical Logistics information systems used throughout the Services. This number was substantially increased from the original FEA due to replacement of systems reaching their life expectancy. At the time of the FEA, figures were not available for many of the Navy systems. These figures were collected during this workshop and an additional \$1.75 million was added to the original figure. This figure was based on information provided by the Naval Medical Data Services Center.

Based on the knowledge of the ABC Group and using the Information Management System Matrix (Appendix F), the \$14.7 million was distributed among the activities.

Other

Training and contract costs were the two categories identified within this area. Each of these categories is discussed below.

Training Costs

The updated FEA depicts a figure of \$5.3 million for training. This figure includes only the cost of Air Force training for medical equipment repair. At the time of the FEA, figures were not available for the Army or Navy. Figures for the Army and Navy could not be collected in a timely manner; therefore, they were not included in this workshop report. This figure was allocated to the activity of A12 (Manage Medical Equipment).

Contract Costs

The updated FEA depicts a figure of \$47.6 million for contracting costs. For additional information on the computation of this number, please see pages 2-13 and 2-14 of the original FEA. This number was allocated to the major activities as shown in Figure 6-6.

Activity		Percentage Allocated
A0	Perform Medical Logistics	100%
A1	Control Medical Assets	15%
A11	Manage Medical Supplies	2%
A12	Manage Medical Equipment	11%
A13	Manage Medical Facilities	2%
A2	Manage Information	0%
A3	Acquire/Manage Outsourced Services	80%
A4	Conduct Financial Operations	5%

Figure 6-6. Distribution of Contract Costs

6.3 Performance Measures

Performance measures and objectives gauge the success of business process improvements over time. Good performance measures that properly reflects changes in the business process are obtained from accurate, easy to collect information. Performance measures and objectives become the basis for outyear forecasts that allow for an estimation of the benefits achieved through implementation of improvements.

Performance measures are established to monitor the success of meeting organizational goals and objectives. From the ABC Group's viewpoint, some improvement objectives of the Medical Logistics community are as follows:

- Create a DoD-wide standard logistics information system;
- Improve responsiveness to the customers;
- Consolidate and share services in the acquisition of supplies on a regionalized basis;
- Reduce the time health care providers spend on logistics functions so their time can be focused on providing health care;
- Take advantage of large volume procurement agreements; and,
- Improve customer satisfaction.

These objectives will support senior management goals to drive down costs, streamline processes, and improve quality health care. The focus areas discussed in Section 7 are recommendations to help

achieve these objectives. In addition, the business process improvements provide further justification for a standard logistics information system.

As a result of complete implementation of the standard system, there should be an overall cost savings to the Medical Logistics community. In addition, the standard system should enable health care providers to quickly identify their logistics requirements and spend more time providing patient care. As a result, a higher level of overall customer satisfaction can be expected.

To meet organizational goals and the DoD performance objectives, the ABC Group discussed various performance measures and objectives for each functional area within Medical Logistics. As a result of meeting Medical Logistics performance objectives, the DoD objective of reducing operating costs can be met. Performance measures and objectives identified by the ABC Group can be found in Figure 6-7.

Functional Area	Performance Measure	Performance Objective
Supply	Order and Ship Time	Increase Responsiveness to Customers and Reduce Inventory
	Direct Fill Rate Percentage	Improve Response Time and Increase Customer Satisfaction
	Level and Value of Inventory	Reduce Inventory Costs
Equipment	Equipment Acquisition Time	Improve Availability of New Technology and Maintain a State of Operational Readiness
	Equipment Down Time	Increase Availability of Ready-to-use Equipment and Maintain a State of Operational Readiness
Facilities	Price per Square Foot	Reduce Costs and Improve Allocation of Facility Spaces
	Response Time to Satisfy Requirements	Increase Customer Satisfaction and Responsiveness to Customers

Figure 6-7. Medical Logistics Performance Measures and Objectives

6.4 Business Process Improvement Opportunities

The business process improvement opportunities evolved as a direct result of conducting activity based analysis. One purpose of the ABC workshop was to define and propose improvements in conducting the business of Medical Logistics. Approximately 150 improvement ideas were identified and recorded during the initial modeling process of the AS-IS activity models. These ideas were expanded into improvement opportunities by combining and deleting as appropriate. Each idea was written by succinctly defining the problem and a recommendation. This resulted in over 50 improvement opportunities which can be found in Appendix I. The business process improvements were further examined and placed into the following categories:

- **Customer Service.** Improvements which offer opportunities to improve customer satisfaction.
- **Receipt and Distribution.** Improvements which offer opportunities to improve the efficiency of receiving and distributing materiel.
- **Facility Management.** Improvements which offer opportunities to streamline and increase efficiency for managing facility assets and programs.
- **Equipment Management.** Improvements which offer opportunities to streamline and increase efficiency for managing equipment assets and programs.
- **Acquisition.** These business opportunities are anticipated to improve the efficiency and timeliness of acquiring materiel and related facility support.
- **Training.** These business opportunities will improve planning and administration of Medical Logistics training programs.

Section 7 includes the consolidation of the improvement opportunities into focus areas of findings and recommendations.

Section 7

Recommendations

7.1 Introduction

In order to control rising health care costs, the Services have been charged with identifying and implementing cost containment initiatives. In response to this DoD mandate, the Services have examined and compared methods and resources used by the Tri-Service medical community and private industry.¹ This comparison revealed that industry has taken greater advantage of current methods and technology. By implementing similar methods and technologies, the Services should realize many benefits such as lowered cost and improved response to customer needs.

Due to numerous and fragmented systems, the Medical Logistics community is unable to interface within or between the Services. Inaccurate, untimely, or unavailable data results in inefficiencies and lack of total asset visibility. Inability of the Services to interface creates significant problems, particularly during times of contingency operations, and also impairs the ability to take advantage of economies of scale. Fragmented systems and lack of technology also create problems in responding to customer needs in a timely manner. Given the critical nature of patient care, implementation of a standard integrated system should enhance the ability of the Services to respond to patient needs in a more cost effective and efficient manner. A single integrated system enables the Services to take advantage of economies of scale, provide for total asset visibility, and enhance customer support.

During this workshop, the current methods and processes used by the three Services in performing Medical Logistics functions were documented and analyzed for improvements. Initially, the improvement ideas were placed into various categories and addressed as individual issues. During the development of the individual focus papers, it became apparent that an integrated system is required as the first step in solving many of these problems. It was further realized that DMLSS could be an appropriate vehicle to accomplish this integration.

7.2 Focus Areas

The following focus areas are examined in this section:

- Customer Service (page 7-3)
- Receipt and Distribution (page 7-5)
- Facility Management (page 7-7)
- Equipment Management (page 7-9)
- Acquisition (page 7-11)
- Training (page 7-13).

The focus areas outline some deficiencies and potential resolutions. Many benefits may be realized by implementing DMLSS as the initial step in addressing these issues. Figure 7-1 represents a summary of the benefits identified by the group.

¹ MEDLOG Future Work Concept, Vision Element 12, MF 1.

- Provide Standard Methods of Operation and Documentation
- Allow Total Asset Visibility
- Reduce Requirements for Training
- Improve Customer Satisfaction
- Improve Responsiveness to Patient Care Needs
- Allow Primary Health Care Providers to Spend More Time on Direct Patient Care
- Provide Equitable Distribution and Redistribution of Assets
- Provide Accurate and Timely Data
- Allow Accurate and Timely Identification and Tracking of Requirements
- Improve Access to Medical Logistics Related Data
- Eliminate Duplication of Efforts
- Enhance Quality Assurance Procedures
- Improve Ability to Implement Total Package Fielding Procedures
- Decrease Paper Work Requirements
- Improve Communication Within and Among the Services

Figure 7-1. Potential Benefits

Significant benefits have been identified which may be realized by the successful implementation of an standard integrated system. These benefits may extend not only to the individual Services and the DoD, but to the taxpayer as well through more efficient expenditure of tax dollars. Successful implementation of an integrated system is contingent upon support at the highest levels. Current policies and directives may require refinement and modification to realize the benefits outlined in Figure 7-1. To ensure a coordinated effort, standard policies and procedures must be developed and implemented.

Customer Service

Description. The ability to satisfy customers is a key indicator of a successful Medical Logistics support program. Improvement opportunities which provide for enhanced communication, decreased customer workload, and improved overall customer satisfaction are discussed below.

Customer Support Information

Issue. Customer dissatisfaction is frequently associated with a lack of awareness pertaining to the status of funds or supplies, and the lack of easy access to procurement history and alternate sources of supply. Additionally, customers are often confused by the complex Medical Logistics organization which leads to frustrations in trying to obtain logistics information and support. The multifaceted logistics discipline requires that customers interpret various procedures written in unfamiliar logistics terminology. This is further complicated by the lack of clear and concise guidance required to obtain Medical Logistics support. This lack of familiarity and guidance may lead to errors in preparing the various forms required for support which results in duplication of effort.

Recommendation. Information should be made readily available to customers. Customers should have access to a fully integrated automated system such as DMLSS to prepare requisitions or access information. A standard user's guide, written in layman's terms, should be provided for guidance and assistance.

Justification. A fully integrated automated system such as DMLSS may provide easy access to all information required by customers. Real time information may enhance customers' ability to properly plan and manage their resources. A user friendly system should reduce the time required to complete logistics tasks, allow customers more time to devote to their primary duties, reduce frustrations, and result in greater customer satisfaction.

Supply Support

Issue. Unofficial inventories are managed by customers in order to ensure availability. These unofficial inventories have been maintained as a result of the inability to provide JIT support. Time used by customers to manage unofficial inventory and duplicate efforts to obtain supplies detract from performance of primary duties.

Recommendation. The forward logistics concept, which is the management of supplies by logistics personnel to the point of consumption, should be instituted. This management of supplies should include backorder procedures in order to preclude the need for customers to duplicate an order.

Justification. Elimination of the unofficial inventory by the forward logistics concept should enhance total asset visibility, support JIT delivery, and allow more appropriate allocation of resources. Backorder procedures may eliminate the need for customers to duplicate efforts in obtaining required supplies. The combination of these two efforts could provide more timely and responsive customer support and result in greater customer satisfaction.

Electronic Data Interchange

Issue. Use of manual procedures in purchasing, contracting, and payment of invoices is labor intensive and time consuming. These manual procedures extend the Processing and Administrative Lead Time (PALT) and may result in late payment penalties. Additionally, a source of supply may be disrupted as a result of untimely payment of invoices.

Recommendation. Electronic Data Interchange (EDI) capabilities should be expanded for ordering and invoice payment purposes. These EDI capabilities should interface with DMLSS for more complete integration of the logistics system.

Justification. EDI capabilities may reduce the PALT and improve response time to customers. More timely payment of invoices may reduce the potential for late payment penalties and the possibility of disrupting the source of supply as a result of late payment.

Performance Measures

Issue. Adequate and timely communications between logistics personnel and customers does not always exist. This can result in an inability to accurately identify and address specific concerns. Poor communications and an inability to recognize these issues may result in reduced accuracy in measuring customer satisfaction. Performance measure results are examined by manual extraction, manipulation, and analysis of data.

Recommendation. An easy and timely means of communication should be provided to customers for addressing issues and concerns. This communication link should be incorporated in the form of electronic mail capabilities. An automated means of calculating performance measurement results should be provided to logistics personnel. DMLSS should provide an appropriate means of capturing and reporting, in standard format, data related to performance measures.

Justification. Open communications and accurate performance measures may provide a means to evaluate the quality of medical logistics support provided. This will allow deficiencies to be identified and addressed in a timely manner.

Summary. Several deficiencies and recommended corrective actions have been identified to improve customer satisfaction. Incorporation of EDI capabilities, electronic mail, and the ability to capture performance measurement data in DMLSS should provide a fast and accurate means of correcting deficiencies which detract from customer support. Improved responsiveness, easy access to information, reduced late payment penalties, and open communications channels should enhance support and thus customer satisfaction.

Receipt and Distribution

Description. Receipt and distribution of medical assets is a labor intensive process supported with limited automation. These manpower intensive tasks reduce efficiency, increase the potential for error, and extend response time. Processes which present opportunities for improvement include warehousing and management of suspended items.

Warehousing

Issue. The majority of existing receiving, storage, and distribution functions operate without contemporary materiel handling technology. Reconciliation of shipping manifests with received products is a critical step in the warehouse operation. This process is hindered by lack of automation. Materiel which should be distributed immediately to satisfy a requirement may be stocked on warehouse shelves creating unnecessary handling of items and delays in providing materiel to the customer.

Recommendation. Implement use of optical scanners, bar code readers, and voice technology with the capability of verifying shipping documents, updating balance records, and identifying backordered items. Organizations should obtain proposals to retrofit their materiel handling and warehousing operations with contemporary systems that will improve their efficiency. These proposals should be submitted for funding consideration through the appropriate channels. New construction projects should include provisions for state-of-the-art materiel handling technology.

Justification. Use of modern technology will improve accuracy and reduce duplicate handling of materiel and data entry, resulting in a more efficient and effective receipt and distribution operation. Planning and programming for current materiel handling technologies, where economically feasible, translates into reduced manpower requirements, improved accuracy, and enhanced responsiveness to customer requirements.

Suspended Items

Issue. The management of suspended items is labor intensive and subject to inaccuracies. Information is created and transferred through paper media during several stages of the notification process and results in delays which inhibit timely recognition of suspended items.

Recommendation. To improve timeliness and accuracy, all suspended item information should be automated and include electronic communication from the point of origin through all inventory control points (i.e., Defense Personnel Support Center (DPSC), Navy Medical Logistics Center (NMLC), Air Force Medical Logistics Office (AFMLO), U.S. Army Medical Materiel Agency (USAMMA), and Medical Treatment Facility (MTF)).

Justification. Use of a standard automated system to track suspended items provides uniform and timely notification for product recalls and safety alerts throughout the medical community. Timely notification decreases adverse patient outcomes attributed to product liability. In addition, an automated system should reduce errors that occur when multiple organizations are involved in the notification process.

Summary. Some receipt and distribution functions of Medical Logistics are being performed using manual methods. Employing technologically advanced materiel handling equipment and the automation of suspended item information should improve efficiency, effectiveness, and responsiveness of warehousing operations and suspended item management.

Facility Management

Description. The objective of the facility management support program is to ensure that medical buildings and associated utility, transport, and communication systems are acquired, operated, maintained, and altered in a manner that provides the most suitable and productive environment for normal medical operations and planned contingencies. This mission responsibility currently rests with the Services at the MTF level and is accomplished in a nonstandard and fragmented manner.

The DoD medical facilities represent a substantial capital investment with a plant replacement value of over \$14 billion.² Based on historical funding and in light of shrinking budgets, funding for acquisition of additional inventory assets should continue to decline. It is imperative that the life of the inventory be extended through proper management of resources. The recommended facility management and acquisition business practice improvements should extend the economic life and maintain the value of facility assets.

Management Information

Issue. Information is collected and transferred to facility resource planners in a nonstandard format without the support of an automated information system. Local activities collect facility information, (e.g., age, square footage, space allocation, real property equipment, maintenance schedules, repair and service requests, training, inspections, projects, and new products) that is stored in a conventional means (i.e., file cabinets, personal computers, and human memory). As information is forwarded to higher levels, it may be uncoordinated, incomplete, or inaccurate. This deficient information leads to decision making without the total knowledge of resources available, demographics changes, or technological advances. Lack of coordinated, complete, or accurate information has resulted in many facilities which are not configured or equipped to provide modern health care services.

Recommendation. The MHSS should develop standard procedures for collecting and forwarding facilities information. These procedures should be supported by an automated information system which streamlines local operations and electronically transmits information to decision makers. These procedures may be supported within the framework of DMLSS.

Justification. The Services and the DoD will receive accurate and timely information on medical facility capabilities, assets, and deficiencies. This should allow planners to define and defend facility budget requirements and allocate resources consistent with facility life cycle management principles. Accurate and accessible facilities information should help planners make decisions which enable facilities to reduce the risk of injury, infection, or death attributable to system failures, or inadequate safety and fire protection.

Life Cycle Management

Issue. The life cycle management approach in maintaining the vast capital investment that facilities represent is virtually nonexistent. Organizations should be allocating between two to four percent of the current replacement value for facility maintenance and repair (excluding

² Source: Office of the Army Surgeon General, Resource Management; Bureau of Medicine and Surgery; Air Force Surgeon General Accounting Office; 1992 data.

modernization and alterations).³ The specific percentage depends on factors such as age of buildings, type of construction, usage, the maintenance structure, and climate. Facility maintenance and repair costs include routine maintenance, maintenance projects, repair projects, and contracted architecture and engineering services.

Newly constructed facilities are state-of-the-art at the completion of the project, but begin the deterioration and aging process soon after. Medical facilities are dynamic and require more frequent upgrades or improvements, and historically have been under funded. As a result, the condition of many facilities deteriorates to the degree that medical procedures are conducted in inadequate facilities. In today's environment requirements are funded based on short-term needs versus long-term planning considerations.

Recommendation. A corporate strategy for acquisition and management of a facility must advocate the maintenance and repair costs through the life of a facility. Adequate funding for facility maintenance and repair, as well as for modernization and alterations, should be made available to support strategic planning and facility life cycle management.

Justification. The implementation of an adequately funded life cycle management program, should ensure efficient facilities that provide safe working environments. In addition, aesthetically pleasing and safe environments promote staff retention and patient satisfaction.

Summary. Enhanced coordination and transfer of standard information to health care planners should enable a sound corporate strategy to preserve DoD facility assets. The DMLSS may facilitate this communication link and standard formatting criteria. In addition, DMLSS may provide the capability to track information and facilitate implementation of life cycle management.

³ "Committing to the Cost of Ownership," National Academy Press, Washington, DC, 1990.

Equipment Management

Description. This paper has been developed to address issues concerning the management of equipment within the military medical departments. The areas of concentration are property accounting and maintenance of equipment. Issues pertaining to the acquisition process are addressed in the acquisition focus area.

Equipment assets constitute a significant expenditure in the operation of a health care facility. Value of the military medical departments' equipment inventory is approximately \$2.5 billion,⁴ excluding equipment required for facilities operations. Proper management of these assets is critical. Inaccurate accounting procedures and inadequate maintenance lead to premature equipment loss or failure. The discussion below focuses on several issues within equipment management.

Property Accounting Procedures

Issue. Inconsistent and fragmented accounting procedures results in duplicate or incomplete databases, thereby not allowing total asset visibility. Although procedures vary among the Services, requirements exist to monitor and account for equipment with a unit cost as low as \$300. This is a manpower intensive and time consuming process which often results in inventory inaccuracies. Additionally, many equipment maintenance, inventory, and property accounting systems do not interface and are maintained separately, thereby creating duplication of effort and record inaccuracies. Extensive manpower is required to maintain and reconcile these duplicate databases.

Recommendation. A standard integrated system to encompass equipment maintenance, inventory, and property accounting should be developed and implemented throughout the Services. This system should incorporate standardized accounting, inventory, and maintenance business rules and data structures. To assist in the monitoring and accounting for portable equipment assets, the use of radio frequency (RF) tags should be instituted to automate inventory updates and tracking. This monitoring system should interface with the integrated system to enhance maintenance, inventory, and property accounting procedures.

Justification. Through the use of a standard integrated system and a common database, maintenance, inventory and property accounting updates would be made simultaneously. Use of a standard system and procedures can enhance electronic interface between organizations and Services for purposes of consolidating and sharing of data. Use of the RF tags should virtually eliminate physical searches for equipment which changes locations within the medical facility. This enhances the ability to track and account for lower cost equipment assets, improve accuracy of the database, and gain total asset visibility. During contingency or wartime operations, the Services would have fully compatible systems which greatly enhances critical Medical Logistics support such as resupply, medical evacuations, and redistribution of assets.

⁴ Source: United States Army Medical Materiel Agency, Navy Medical Logistics Command, Air Force Medical Logistics Office: Clinical Engineering Support Branch; 1992 data.

Equipment Maintenance

Issue. Inadequate maintenance procedures shorten the life of equipment, result in increased equipment downtime, and require significant expenditures for early replacement. During extended periods of downtime and lengthy delays for approvals, funding, and acquisition of replacement equipment, the quality of care provided to beneficiaries is compromised. Scheduling problems resulting from equipment in a state of disrepair has an adverse effect on the quality of care provided as well as reducing the productivity of the provider. Additionally, non-availability of adequate equipment resources causes undue referrals to CHAMPUS and civilian facilities, thus increasing the cost of health care.

Manpower intensive preventive maintenance programs are frequently at the expense of a considerable backlog of unprogrammed maintenance and repairs. This frequently results in a requirement for expensive maintenance contracts.

Recommendation. Risk based preventive maintenance should be standardized and instituted by the Services to allow redistribution of assets for the reduction of the maintenance and repair backlog. Risk based preventive maintenance is a concept where the need for, or frequency of, preventive maintenance is determined by the type of equipment and potential risks to operator and user. The Navy has piloted this program and continues to satisfy the standards of JCAHO.

Justification. Risk based preventive maintenance has the potential to save a significant number of manhours which can be used to manage the maintenance and repair backlog, reduce the number of maintenance contracts, and significantly decrease the equipment downtime.

Summary. Billions of dollars have been invested in equipment to support the operation of military medical facilities. The high dollar value of these assets and the critical nature of this equipment justifies improved management techniques. Integrated record keeping procedures for maintenance, inventory, and accounting procedures, with the use of an RF tag tracking system, reduces redundant and time consuming procedures, controls losses, and supports total asset visibility. Risk based preventive maintenance procedures would provide a means of concentrating efforts in areas of customer support and cost saving measures. The DMLSS would be an appropriate vehicle to support these business improvement recommendations.

Acquisition

Description. The Services expend substantial resources in acquiring medical materiel and related facility support. The acquisition process requires long lead time which is affected by the lack of standard procedures within the DoD. Inconsistencies exist in the development of requirements, support documentation, approval, and funding processes. Within the area of acquisition, there are many problems which present opportunities for business improvements. Several of these problems are described below with recommendations and justifications.

Service Contracts

Issue. Developing service contracts is complex and technically demanding. Initially creating and amending these contracts requires a high degree of expertise and is labor intensive. Local organizations create service contract specifications that may exist at other locations. This creates unnecessary work and increases costs to establish contracts.

Recommendation. Develop standard service contract shells to be used by all the DoD organizations. These shells should be automated with a decision support system and allow managers to enter information which is unique to their accounts. In addition, a central repository of supporting documents (e.g., statements of work, performance work statement) should be established and accessible through this system. A DMLSS interface should be developed to support these contract shells.

Justification. Standard shells, forms, and language are efficient, decrease frustration levels, reduce administrative error, and increase the ability of the facility to provide a continuum of service. DMLSS support of the standard shells and an interface with a central repository could decrease administrative lead time and improve responsiveness to the customers.

Technical Review Data

Issue. Technical review is the first step in the acquisition process. Currently, every command maintains an extensive library of technical publications, catalogs, and product literature which must be researched prior to acquisition. This documentation is maintained on various media, requires extensive storage space, and demands many manhours to update. Access to this information can be cumbersome and time consuming, especially for manual systems.

Recommendation. A central data bank of technical review information should be established to support the acquisition process. This data bank should be maintained in an electronic or magnetic format accessible through a DMLSS interface. Capabilities available should include document retrieval with extensive search capabilities for rapid access to required information.

Justification. A central data bank could be used to consolidate technical review information, improve accessibility, and free up space which is presently used for storage of paper documentation. Manhours saved on filing, storing, retrieving, and updating information at local commands may result in significant cost savings.

Total Package Fielding

Issue. Efforts to accomplish TPF are disjointed and do not ensure that requirements are integrated in a timely manner. The authorization, funding, and procurement processes are not coordinated which may result in equipment being delivered without the necessary room preparations, support utilities, installation kits, accessories, training, and repair parts for operation. This results in delayed ability to use the equipment which reduces customer support and the level of patient care. In addition, these delays can result in extended storage periods which increase cost and the risk of damage or pilferage.

Recommendation. The requirements identification, funding, and procurement processes should be coordinated to ensure that TPF is accomplished. Additionally, the capability to track these processes should be coordinated to ensure visibility of all TPF resources. A status reporting feature should be incorporated within DMLSS to provide updated status of ongoing acquisitions.

Justification. Coordination of TPF requirements will ensure that equipment is available for use with minimal delays. This will minimize installation time and improve responsiveness to customers.

Cost Benefit Analysis

Issue. The current method of generating a Cost Benefit Analysis (CBA) is time consuming and labor intensive. Lack of a standard format creates inconsistencies in the types of information collected. The lack of expertise in preparing CBAs may result in needed equipment being disapproved due to inadequacies in the process. Health care provider dissatisfaction may be increased, undue delays may be experienced, and potential savings may be lost due to administrative errors.

Recommendation. Include decision support systems in the development of DMLSS with standard shells for producing CBA documents.

Justification. The development of standard CBAs that provide ease in preparation and justify procurement actions can reduce time spent for approval, funding, and acquisition. Savings can be realized in the procurement of items which clearly reflect a return on investment and emphasize life cycle cost benefits. DMLSS should provide a method to streamline and standardize the CBA process enabling health care providers to spend more time on direct patient care.

Summary. Several initiatives have been identified to improve the acquisition process. The development and fielding of DMLSS should facilitate the implementation of these initiatives. With DMLSS, acquisition processes should be tailored to standardize the preparation of procurement documents, reduce the time primary care providers spend in non-patient care related tasks, and support total package fielding.

Training

Description. The Services expend substantial resources in training Medical Logistics personnel. Currently, each Service has its own training programs and methodologies which result in inconsistencies in the way personnel are trained to perform their duties. Often, there is a disconnect between matching appropriately trained personnel with proper assignments. Inconsistencies also exist in the way funds are allocated for training, which results in personnel not having the requisite skills to perform assigned duties. Many opportunities exist for business improvements within the area of training, some of which are discussed below.

Training Technology

Issue. The Services are not making full use of current technologies in training applications. Many manhours are expended training newly assigned personnel on routine tasks. Often, the Services' training programs focus on operating independent automated systems versus teaching medical logistics functional tasks. Existing automated systems are not user friendly and require the user to search through volumes of documentation to accomplish basic tasks.

Recommendation. Training programs should be structured to use on-line help capabilities, built in tutorials, and self-paced computer-based training programs. Training should be focused on logistics functions rather than service unique Medical Logistics systems. The use of tele-conferencing should be expanded to facilities where economically feasible and appropriate. DMLSS should incorporate user friendly features to reduce training time.

Justification. The increased use of current technologies offers significant opportunities to enhance the quality of training, make training more readily available, and overcome the limitations of geographical distances at minimal expense. On-line help features, built-in tutorials, and computer-based training programs could reduce training costs and increase the focus on customer support and medical logistics functions.

Training Funds

Issue. Inconsistencies in the way funds are allocated for training may result in personnel not having the requisite skills to perform assigned duties. Often, local commands are reluctant to release funds for training when the Service member is subject to reassignment. In the case of medical repair personnel, this policy restricts their ability to receive training on specialized medical equipment. Conversely, personnel may receive specialized training and be assigned where there is no requirement for this training due to the inability to identify and properly assign these people.

Recommendation. Decisions regarding logistics personnel attending training schools should be made with the long-term training needs of the Services in mind rather than the short-term needs of local commands. Specialized training received by personnel should be recognized with skill identifiers and documented in personnel records.

Justification. The establishment of skill identifiers would ensure visibility at the assignments branch level resulting in personnel being assigned to positions commensurate with their training. Properly trained personnel could reduce equipment downtime, improve customer satisfaction, and lower costs spent on outsourcing repair services.

Facility Management Training

Issue. Medical facilities are among the most complex and heavily regulated buildings that exist. The management of medical facility assets includes maintenance procedures, construction issues, code compliance, and real property acquisition and management. Unfortunately, there is an inadequate number of experienced managers with comprehensive knowledge of these technical issues. Experienced personnel tend to migrate into other areas of the medical and non-medical professions. This creates very few qualified people to manage billions of dollars of assets, and disrupts continuity of corporate knowledge.

Recommendation. The Services need to recruit, train, and retain personnel who possess commensurate experience or education, such as engineers or engineering technicians. These personnel should be medical department staff with a special designator for the military officers. There needs to be an equitable mix of experienced, qualified civilian managers and military officers at the local and corporate levels.

Justification. Having dedicated management personnel familiar with the intricacies of complex systems related to health care facilities would enable a timely and accurate detection of requirements to help extend the life of these facilities.

Equipment Maintenance Training

Issue. When equipment items are procured, provisions may not be made for operator and maintenance staff training. Additional costs are incurred when training is purchased separately.

Recommendation. Establish a standard procurement practice which specifies operator and maintenance training be included with the procurement of the equipment.

Justification. By including training in the contract, the Services would receive vendor provided training at little or no additional cost. This reduces additional training outlays and contributes to TPF objectives.

Summary. Several initiatives have been identified to improve the quality of training and make more efficient use of training resources. Use of a standard automated system would facilitate the implementation of many of these initiatives and support a standard DoD training program. Standard procedures and on-site computer aided training programs should provide trained personnel with less time taken from their primary duties. These training initiatives should reduce costs, streamline processes, and enhance quality health care.

Appendix A **Participant Address List**

Name	Address	Phone Number
ABC Group		
Blum, Christopher, 1st Lt, MSC, USAF	AF Medlog Office/FOM Fort Detrick Frederick, MD 21701-5006	(301) 619-7487
Dorr, William, MAJ, MS, USA	USAF Medical Center/SGLF Wright Patterson AF Base Dayton, OH 45433-5529 (Home) 4502 Stonecastle Drive, #222 Beavercreek, OH 45440	(513) 257-6343
Haas, Robert, HMC, USN	National Naval Medical Ctr. Biomedical Repair Dept. Building 3, Room 246 8901 Wisconsin Ave. Bethesda, MD 20889-5000	(301) 295-1003
Hughes, Paula, MSgt, USAF	USAF Regional Hospital Elgin/SGL Elgin AF Base, FL 32542	(904) 882-7351
Knotts, John, LT, MSC, USN	Naval Healthcare Support Office 6500 Hampton Blvd. Norfolk, VA 23508-1297	(804) 398-7400
Pease, Alan, LtCol, MSC, USAF	USAF Medical Center/SGLF Wright Patterson AF Base Dayton, OH 45433-5529	(513) 257-6343
Phillips, Larry, LCDR, MSC, USN	Naval Healthcare Support Office Box 140 Jacksonville, FL 32212-0140	(904) 777-7948
Thibodeau, Ron	Sherikon, Inc. 14585 Avion Parkway Suite 2500 Chantilly, VA 22021	(703) 803-7000
Via, David, CMS, USAF	7100 CSW Medical Ctr /SGL APO AE 09220-5300 (Wiesbaden USAF Med Ctr. Lindsey Air Station, Germany)	011-49-611-885-434
Data Modeling Group		
Abeya, Edwin	MFIM One Skyline Place, Ste 1001 Falls Church, VA 22041	(703) 756-5611

Alexander, James R.	Sherikon, Inc 14585 Avion Parkway Suite 2500 Chantilly, VA 22021	(301) 698-2686
Beam, Robert E.	Irwin Army Hospital Attn: HSXX-LD, Bldg 600 Ft Riley, Kansas 66442-5037	(913) 239-7439
Bird, Chuck	Defense Medical Standardization Board Building 1423, Room 157 Fort Detrick Frederick, MD 21702-5013	(301) 619-2186
Cadena, John R. MSGT	USAF Medical Center/SGLR Wright Patterson AFB, OH 45433	(513) 257-7885
Clarke, John H., LTC, MS, USA	HQDA (DASG-HCL-A) 5109 Leesburg Pike Falls Church, VA 22041	(703) 756-8072
Davenport, Bonnie E.	Portsmouth Naval Hospital Management Info. Dept. Portsmouth, VA 23708-5000	(804) 398-7898 (804) 398-7675 (804) 398-5789
Fraser, Carol, CPT, MS, USA	Brooke Army Medical Center ATTN: HSHE-TC-M Fort Sam Houston, TX 78234	(210) 221-2244
Fowler, Pam	USA Health Care Systems Support Activity ATTN: HS-SS Greenway Park 2455 Northeast Loop 410 Suite 150 San Antonio, TX 78217	(210) 221-9771 x346
Gervin, Jeff, SSG, USA	TAMMIS Project Management Office 8610 North New Braunfels, Suite 200 San Antonio, TX 78217-6395	(210) 828-5705
Holland, James	AF Medlog Office/FOS Medical-Dental DBOF Fort Detrick Frederick, Md 21701-5006	(301) 619-2137
Kurmel, Thom, MAJ, MS, USA	USA Health Care Facility Planning Agency 5109 Leesburg Pike Suite 679 Falls Church, VA 22041	(703) 756-8240

Noel, Linda	National Naval Medical Center 8901 Wisconsin Ave. Bethesda, MD 20889-5600	(301) 295-1078
Sietsema, Harvey, LtCol, MSC, USAF	MFIM One Skyline Place, Ste 1001 Falls Church, VA 22041	(703) 756-5611
Tackitt, R.D., CAPT, MSC, USN	MFIM One Skyline Place, Ste 1001 Falls Church, VA 22041	(703) 756-5611
Thompson, Daniel, WO1, USA	USA Medical Materiel Agency Fort Detrick Frederick, MD 21702	(301) 619-7187
Ziemke, Lisa A., LT, MSC, USN	Naval Medical Information Management Center Code 21 - Project Management Bethesda, MD 20708-5066	(301) 295-1940
Observers		
McAdam, Alan Rappaport, Ilana	EDS 1600 N Beauregard Alexandria, VA 22311	(703) 578-5434
SRA Staff		
Borden, Jennifer Coville, Pat Fritz, Gaynell Gay, Michele Kanapesky, Christine Orr, Charlie Parker, Ken Murray, Janet Rounds, Chuck Schweigart, Stefania Smith, Debbie	SRA 2000 15th Street North Arlington, VA 22201	(703) 558-4700

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Appendix B

IDEF Activity Modeling Basics

Introduction

This Appendix contains some excerpts from the "Modeling for Managers" course material provided by D. Appleton Company.

Definition

The aim of the IDEF activity modeling technique is to support the documentation of business processes as well as the discovery and documentation of data requirements from the process perspective.

The activity modeling technique, known as IDEF0, resulted from the Air Force's Integrated Computer Aided Manufacturing (ICAM) program and is recognized by the Air Force as an important technique for modeling activities. The technique has been adopted because of its flexibility and widespread use throughout business, industry, and government.

A completed activity model graphically depicts the specific steps, operations, and information needed to perform an activity. Models also show how specific activities are related to one another.

Activities

An activity is a named process, function, or task that occurs over time and has recognizable results. Although activities are performed within functional areas of an organization, it is important that they are defined independent of any functional area. The tendency to model the organization structure rather than its processes should be avoided. In a diagram, the activity is represented by a rectangular box with the verb phrase that describes the activity.

ICOM

The term ICOM refers collectively to the group of information flows between activities which have one of four roles in the activity.

- **Input.** Information or material used to produce the output of an activity.
- **Control.** Information or material that constrains or controls an activity.
- **Output.** Information or material produced by or resulting from the activity.
- **Mechanism.** Usually people, machines, or systems that perform the activity.

The particular role of an ICOM is identified by the position of its arrow in relation to the activity box.

Context Diagrams

The context diagram shows an activity being explored with its associated ICOMs. Since the technique is hierarchical, this activity represents the entire subject being modeled. The viewpoint and purpose of the model are typically stated on the bottom right hand side of the diagram.

Node Trees

A node tree shows the activities, without their ICOMs, on a single hierarchical diagram for easy reference. Each dot on the tree represents an activity. Each line represents a decomposition relationship. The structure shows the activities and subactivities within the model.

Decomposition Diagrams

Each activity on the diagram may be described in more detail, or decomposed, on a separate, lower level diagram referred to as the decomposition diagram. A decomposition diagram contains all the child activities of the parent activity. Decomposition diagrams allow a complex activity to be broken down into smaller, simpler, more detailed activities. As a general rule, each decomposition diagram should contain at least three, and no more than six activities and four to six arrows per side of an activity box.

Glossary

In addition to the diagrams, a complete ICOM glossary is necessary to fully convey a common understanding of the model. Each ICOM should be defined in terms of its use and intent with respect to the model.

Activity Descriptions

To aid in communicating the activity model to people unfamiliar with the IDEF0 technique, a detailed activity description of each activity box represented by the model is provided. These descriptions detail the ICOMs of the activity as well as other activities affected by the outputs. The activity description should be able to stand alone as a means for communicating the same information as the model.

Uses

There are several uses of activity models such as:

AS-IS Models. The AS-IS model communicates a consensus view of the current processes and ICOMs and is often used as a discussion tool to identify improvement opportunities and to assess changes from the implementation of new processes.

TO-BE Models. The TO-BE models represent the desired activities and associated ICOMs based on the implementation of improvement projects against the AS-IS baseline.

Data Discovery. Information of interest to the enterprise may be extracted from an examination of the ICOMs of an activity model. This information can then be used when specifying transactions that are eventually used to automate the process.

Activity Based Costing Framework. Activity models provide a basis for analyzing costs in ABC analysis. The decomposition of activities allows the application of specific costs to activities. These costs can then be aggregated to analyze the activities according to the actual impact they have on the enterprise's costs.

Benchmarking Tool. Benchmarking is an activity-based analysis tool for examining "world-class" processes in order to replicate some of the elements in similar processes. By describing the activities in common terms, it becomes simple to discuss the opportunities for improvement based on the benchmark model.

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Appendix C

Medical Logistics AS-IS Activity Model Approach

Medical Logistics was one of the earliest functional activities incorporated in the CIM initiative (March 1990). An interim FEA was completed in 1991, before adoption of IDEF modeling and ABC as the DoD standards. This FEA was updated in the latter half of 1992 to incorporate a 1993 baseline as well as several other refinements. The current FEA demonstrates an expected return on investment greater than 1,900 percent from development of DMLSS. Funds to develop and field this system are programmed beginning in fiscal year 1994.

To develop functional requirements for the DMLSS and bring the Medical Logistics initiative in line with the revised DoD 8020.1-M, a Medical Logistics Baseline/Scoping Workshop was completed on 19 January 1993. An ABC and Data Modeling Workshop began on 1 February. On 2 March, at the outset of ABC, SRA staff provided quality assurance (QA) comments on the decomposed IDEF activity model. These comments included a high-level observation that decomposition of the A1 node (Control Medical Assets) followed commodity lines (supplies, equipment, facilities) rather than reflecting distinct activities. Moreover, similar or redundant activities appeared to be decomposed under the three commodity-based branches of the A1 node.

The origins of this structure were contained in the model completed during the January workshop. The report from that workshop indicated the group had considered an alternative structure, along the lines recommended in the March QA review, and such a decomposition was illustrated as a for exposition only (FEO) diagram in the report. The Core Team in the January workshop decided to proceed with a commodity-oriented model of AS-IS activities because:

- Many of the team members' experience was concentrated in a particular commodity area.
- The commodity-oriented model reflected the team's understanding not only of how the activities are performed, but what the activities are today; and,
- The "identify requirement" processes differed significantly by commodity (e.g., the activity of defining requirements for a \$500 million medical facility bears little resemblance to the requirements process for a consumable supply item), even if both are named "identify requirement."

In making this decision, the Core Team intentionally reserved the option to restructure the TO-BE model along the lines of the FEO decomposition, once a more complete understanding of the AS-IS business relationships had been modeled.

Based on the QA recommendations from SRA staff, the ABC Group conducted a lengthy re-examination of the pros and cons of changing the A1 node of the AS-IS model before proceeding with ABC analysis. The ABC Group agreed that developing a fully integrated business model may require further evolution along the lines suggested in the SRA QA review during the TO-BE workshop. However, the group also recognized several important reasons not to change the AS-IS model during this workshop. Specifically:

- Data to support ABC was more available or could be readily estimated using the present decomposition;
- Changing the AS-IS model was unlikely to identify additional business process improvements;
- Restructuring the model at that stage offered little prospect of improving the ABC Group's understanding of current business practices and relationships;
- Integration of activity and data models depended on model stability;
- The short time available to establish functional requirements in support of system development did not allow continued refinement of an AS-IS model; and,
- The integrated TO-BE data and activity models will be the principal drivers for system design, not AS-IS models.

As a result of this discussion, the ABC Group decided to use the AS-IS model in its current state.

Appendix D Activity Descriptions

This Appendix provides a description of the Medical Logistics activities identified in the modeling sessions. As a basis for this Appendix, the activity descriptions from the Medical Logistics Baseline/Scoping Workshop were reviewed and validated. As a result of this review, many of the original activity descriptions were modified to reflect the changes made to the activity models.

Table D-1 represents an activity description index. This index provides a cross-reference between activity names and their description location within this Appendix. The activities have been listed alphabetically. The page number refers to the page within this Appendix on which the activity is described.

Table D-1. Activity Description Index

Activity Name	Activity Number	Activity Page
Account for Equipment	A123	D-11
Acquire Equipment	A122	D-10
Administer Facility Services	A132	D-14
Administer Finances	A43	D-18
Administer Outsource Option	A34	D-18
Analyze Information	A23	D-16
Arrange Outshipment	A1143	D-8
Arrange Requirements	A1311	D-12
Assess Requirements	A131	D-12
Assign Funds	A42	D-18
Assist the Customer	A1211	D-9
Assure Quality Product	A1132	D-6
Collect/Update Information	A22	D-16
Complete Outsource Package	A331	D-17
Conduct Financial Operations	A4	D-18
Conduct Preventive Maintenance	A1333	D-15
Control Access	A21	D-15
Control Medical Assets	A1	D-4
Coordinate Repairs	A1332	D-15

Activity Name	Activity Number	Activity Page
Deliver Supplies	A1144	D-8
Determine Acquisition Strategy	A1221	D-10
Determine Outsource Option	A32	D-17
Determine Stock Level Requirements	A1131	D-6
Develop Alternatives	A13121	D-13
Develop Projects	A1312	D-13
Dispose Information	A25	D-16
Document Priorities	A1213	D-9
Evaluate Program Performance	A1323	D-14
Evaluate Requirements	A1212	D-9
Execute Outsource Option	A33	D-17
Identify/Review Requirements	A121	D-8
Issue Supplies	A114	D-7
Maintain Equipment	A124	D-11
Maintain Facility Infrastructure	A133	D-14
Manage Building Systems	A1331	D-15
Manage Information	A2	D-15
Manage Medical Equipment	A12	D-8
Manage Medical Facilities	A13	D-12
Manage Medical Supplies	A11	D-4
Manage Outsourced Services	A3	D-16
Monitor Due-ins	A1113	D-5
Monitor Due-outs	A1141	D-7
Monitor Procurement Status	A1222	D-10
Monitor Service Schedules	A1322	D-14
Obtain Approval	A1214	D-9
Order Supplies	A111	D-5
Perform Initial Inspection	A1241	D-11
Perform Preventive Maintenance	A1242	D-11

Activity Name	Activity Number	Activity Page
Perform Technical Review/Source Selection	A332	D-17
Pick Issues	A1142	D-7
Place Order	A333	D-17
Prioritize Requirements	A1313	D-13
Process Customer Request	A1111	D-5
Procure Supplies	A1112	D-5
Program Activity Services	A1321	D-14
Provide Information	A24	D-16
Provide Medical Logistics Support	A0	D-4
Receive Equipment	A1223	D-10
Receive Supplies	A112	D-6
Redistribute/Dispose Equipment	A125	D-12
Redistribute/Dispose Supplies	A1133	D-7
Refine/Design Alternative	A13123	D-13
Repair Equipment	A1243	D-12
Request Funds	A41	D-18
Review Internal Capability	A31	D-16
Select Alternative	A13122	D-13
Stock Supplies	A113	D-6
Train Users	A1244	D-12
Update Facility Master Plan	A1314	D-13

A0 Provide Medical Logistics Support

This is the functional activity which plans and executes support for military medical operations across the continuum of conflict. It provides or arranges for the following mission resources consistent with contemporary standards of care and professional requirements of health care providers: 1) design and development, identification, acquisition, storage, movement, distribution, maintenance, and disposition of clinical supplies, equipment, technology, and assemblages; 2) acquisition or construction, maintenance, operation, and disposition of military treatment facilities and contingency hospitals; 3) acquisition of specialized and professional services; and 4) collection and dissemination of information needed for effective planning and operations. (Adapted from Joint Chiefs of Staff (JCS) definition of logistics.)

Reference: Logistics is the science of planning and carrying out the movement and maintenance of forces. In its most comprehensive sense, it consists of those aspects of military operations which deal with: a) design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of materiel; b) movement, evacuation, and hospitalization of personnel; c) acquisition or construction, maintenance, operation, and disposition of facilities; and d) acquisition or furnishing of services. (Source: JCS Pub 1, 1 June 1987, pages 213-214)

A1 Control Medical Assets

Control Medical Assets produces mission-ready equipment, supplies, and facilities. These products, where appropriate, have received proper maintenance checks and quality assurance processing. They have been found to be safe, reliable, and capable of fulfilling their assigned missions in the health care field. These products are monitored throughout their life cycle, from determining and assessing requirements to acquiring, managing, and disposing of these assets. In response to customer needs, an evaluation process occurs. Each requirement is reviewed and then validated to become either a funded, rejected, or cancelled requirement. To meet customer requirements, organic capabilities must be assessed to determine if the goods or services can be provided from available Medical Logistics assets, in-house personnel, or an outsource request from outside the Medical Logistics organization.

A11 Manage Medical Supplies

Manage Medical Supplies monitors the entire life cycle of supplies, including determining requirements; acquiring, controlling, distributing, and disposing of supplies; and providing financial tracking to maintain supplies in a mission-ready status available to satisfy customer needs. Medical supplies are primarily consumable and durable medical, dental, optical, and repair part items. Also included in this category are: subsistence items (except for the Army) and nonmedical supplies necessary to support the medical health care mission.

A111 Order Supplies

Order supplies is initiated as a result of receiving and processing a customer request. If the supply is not stocked locally, an order is processed to obtain the required supplies from sources outside the Medical Logistics organization (e.g., procurement from vendors, requisitions to the wholesale supply system). Orders include the Medical Logistics organization requirements to replenish stock items. Outsource methods are monitored from the time of order until time of receipt.

A1111 Process Customer Request

This activity includes assisting the customer, validating the customer's request, checking the availability of customer funds, validating customer authorization, verifying the existence of a National Stock Number (NSN), validating the item (e.g., unit of issue, quantity, and nomenclature), and forwarding the request to the next level. If the customer requirements are found to be incomplete in any of the above steps, they may be corrected, rejected, or cancelled.

A1112 Procure Supplies

Upon receipt of a funded requirement or an approved supply request, an order may be forwarded to the wholesale supply system or to commercial vendors to obtain the supplies. This action will result in an outsource request or the use of an existing outsource agreement to order the supplies.

A1113 Monitor Due-ins

This activity monitors status, performs follow-ups, or expedites actions as a result of a changing urgency of need. This activity includes comparing the quantity on order to the total quantity required, ensuring the quantity is adequate, and providing for timely receipt. Tracking of critical and mission essential items may require extraordinary expediting action to raise the priority designator, order an emergency quantity, cancel and reorder via an alternative source, or contact vendors, shipping points, and transportation carriers to manually trace materiel until it is delivered.

A112 Receive Supplies

Receive Supplies verifies that supplies received match what was ordered, are in the correct quantity, and that all supplies are in serviceable condition. Financial information regarding received supplies is interfaced with the Services' materiel accounting systems. The supply items are then relocated to inventory or issued directly to the customer. Information regarding the receipt, inspection, and acceptance of supplies by the government initiates a financial trigger for payment when a bill is received and properly certified.

A113 Stock Supplies

The Stock Supplies function includes restocking inventories in logistics facility locations while adhering to storage space utilization principles. Supplies carried in inventory are maintained as mission-ready supplies. This process includes disposition of supplies that are not serviceable, are excess, or have exceeded their potency date.

A1131 Determine Stock Level Requirements

Computation of the stock item requirement levels is based on the evaluation of historical demand data for each item, forecasted requirements, administrative and procurement lead time, cost, source of supply, returns, economic order quantities, and disposal data. Also included are special requirements for medical War Reserve Materiel (WRM). This information is computed through a formula to determine reorder point, safety level, and requisitioning objective for each stocked item carried in inventory.

A1132 Assure Quality Product

This process is the management of inventory items to ensure that quality standards are maintained. This includes management of the shelf life program; timely rotation of stock to ensure supplies are issued on a first in/first out basis within potency expiration dates; managing safety and hazardous materiel programs (such as ensuring that Materiel Safety Data Sheets (MSDS) are identified and available for hazardous items); ensuring materiel is properly stored, maintained, and secured; identifying item recall notices; and initiating disposal actions.

A1133 Redistribute/Dispose Supplies

Redistribute/Dispose Supplies identifies items that are excess to requirements. Excess items may include supplies in the customer's possession, kept in unofficial inventories, and turned in for credit or redistribution. This activity manages the reporting of excess stocked items to the applicable wholesale system inventory manager and arranges for its redistribution, transfer, and return. The process also identifies items that are obsolete, unserviceable, or condemned to be transferred to a Defense Reutilization and Marketing Office (DRMO) for redistribution, sale, disposal, or destruction.

A114 Issue Supplies

This process issues ordered supplies and delivers them to the customer site or facilitates pickup by the customer from the warehouse. Issued supplies may consist of items drawn from stock or items not carried as stocked items but ordered on a Direct Turn Over (DTO) basis and delivered directly to the customer. The process includes monitoring due-outs.

A1141 Monitor Due-outs

Monitor Due-outs manages approved customer issues placed on backorder as a result of not having an adequate quantity of supplies available in inventory to satisfy the total requirement. While awaiting the receipt of supplies ordered for replenishment, these backorders are verified as valid requirements and tracked through the acquisition process. These tracking actions may involve upgrading the priority designator of the stock replenishment order or initiating aggressive follow-up action with the source of supply to expedite delivery based upon the urgency of the customer requirements. Upon receipt of these supplies, backorders are released and issued directly to the customer.

A1142 Pick Issues

The goal of Pick Issues is to locate supplies which have received proper authority for release and are available for issue. Upon locating these items, the approved quantity of mission-ready supplies are drawn, quality assurance information is verified, and the items are forwarded for delivery to the customer. If the required quantity of mission-ready supplies is unavailable from stock, a warehouse refusal action is processed and sent to stock control to reconcile the discrepancy and take appropriate action.

A1143 Arrange Outshipment

Planning for the proper packaging and arranging transportation for mission-ready supplies may be as simple as placing supplies on a cart, or as complex as packing, crating, and arranging shipment. The packaging method is determined by the delivery location. Once packaged, the mission-ready supplies are staged in a logistics facility pending transportation arrangements. Obtaining transportation may involve sending an individual to the customer location or arranging for external delivery services.

A1144 Deliver Supplies

Upon receipt of items prepared for shipping, the items are physically transferred to the customer in accordance with the pre-arranged shipping specifications. This may require proof of receipt and/or obtaining the signatures of authorized personnel for controlled supply items. If the customer is supported by forward logistics, the mission-ready supplies may be arranged on the customer's shelves by Medical Logistics personnel.

A12 Manage Medical Equipment

This activity assures the availability, reliability, sustainability, and readiness of equipment needed for the medical mission. Some of the processes incorporated in Manage Medical Equipment are identifying and reviewing requests, acquiring equipment, accounting for equipment, maintaining equipment, and redistributing or disposing of equipment. Equipment is ordered when specific requirements are identified, validated, approved, and funded. Periodic maintenance is performed to ensure equipment is maintained in a mission-ready condition and is made available to meet the customer needs.

A121 Identify/Review Requirements

Identify/Review Requirements assesses customer requests for equipment resources. Several of the primary elements in this activity are receiving customer requests for equipment, maintenance, and/or disposal; assisting customers with development of requirements; assuring that items are properly identified and justified; performing a technical review of requirements; validating estimated acquisition costs; determining whether excess assets are available to satisfy the requirement; consolidating requirements packages for submission to the Equipment Review Committee or approval authority for prioritization and funding authorization; identifying that requirements for TPF are identified and programmed; and establishing and integrating recommended priorities for acquisition in the event of insufficient funding.

A1211 Assist the Customer

Helping the customer submit a complete equipment requirement package is the key element within Assist the Customer. This includes the submission of all proper documentation required by local procedures and higher authority. Other elements involved are the coordination with sources inside and outside the medical treatment facility, and research and identification of fully justified requirements. Assistance may also be provided relating to a customer's request for maintenance, redistribution, or disposal of equipment. Once a customer's requirement has been fully identified, it is submitted as a requirements package for evaluation and further review.

A1212 Evaluate Requirements

This activity evaluates the customer requirements package to assess proper justification, additional manpower resources, spare part support, maintenance capability, consumable supplies, and any facility alterations and applicable costs required to make the equipment operational. An additional consideration is to determine if existing excess serviceable assets are available for redistribution to satisfy a requirement.

A1213 Document Priorities

This activity documents and provides the supporting paperwork for the recommended prioritization of reviewed customer requirements packages. The prioritization process is influenced by several factors including mission criticality, urgency of need, total cost, and existing equipment maintenance history, condition, and age. These prioritized requirements packages are then submitted for approval and funding using operating targets or other procurement allocations.

A1214 Obtain Approval

This activity obtains the required final approval for acquisition from local and higher authority, based on the dollar value of the equipment from the DoD, Service, and local procedures and policies. Further constraints on the acquisition of these prioritized requirements are the availability and authorization of sufficient funding. Acquisitions over \$1,000,000 include submission for approval at the DoD(HA) level and coordination at the regional level.

A122 Acquire Equipment

This process includes the acquisition of validated funded equipment requirements to the point of delivery of the equipment. The key elements in this process are the aggregation of funded requirements, selection of acquisition strategy, preparation of supporting documentation (e.g., specifications, performance evaluations), and monitoring of the procurement action status through completion of physical delivery at the destination. When necessary, the acquisition of equipment also includes coordination of related requirements such as facility site preparation, installation of equipment, personnel training, and coordinating for initial acceptance inspections.

A1221 Determine Acquisition Strategy

This activity involves consolidating equipment requirements (e.g., DoD Shared Procurement Program), ensuring that the acquisition package is fully funded and complete for submission to the ordering activity, and ensuring that associated TPF resources are incorporated in the acquisition planning strategy. This activity results in an outsource request.

A1222 Monitor Procurement Status

Monitor Procurement Status reviews the acquisition status of ordered equipment and associated TPF resources. The main elements involved are periodic follow-up with the ordering organization and coordination for delivery and installation of equipment.

A1223 Receive Equipment

The activity of Receive Equipment spans the period from the time the equipment arrives until property accounting records are initiated. The received equipment may have originated from outsource agreements or redistribution of existing assets. When equipment is received the shipping manifest document must be verified for accuracy.

A123 Account for Equipment

This activity documents equipment assets, and properly identifies, safeguards, and assesses visibility of equipment. Property custodians are assigned to custodial accounts upon issue of equipment. Appropriate property tags are affixed to each equipment item. This process also involves recording changes in equipment balances on the official property accounting records. Changes may result from equipment issues and transfers among equipment custodial accounts. Accounting records are also maintained to reflect equipment items on loan and those available for loan. Property control numbers are assigned during the issue process for individual identification of each item of equipment. Property control numbers are also used to update custodial and maintenance records.

A124 Maintain Equipment

Sustainment of equipment in a mission-ready posture incorporates the following factors: coordinating for the installation of the equipment; performing or arranging for the inspection, repair, and calibration of equipment; training users in safe and effective equipment operation; analyzing and reporting occurrences of hazardous incidents connected with the use of equipment; communicating, correcting and documenting action on product recalls and hazard alerts affecting equipment; and archiving historical maintenance records.

A1241 Perform Initial Inspection

Upon receipt of equipment into the medical system, the following activities occur under Perform Initial Inspection: performance of safety inspection checks, performance of operational checks of equipment, calibration of the equipment, establishment of equipment maintenance records in the equipment database, and verification that the items received match specifications in the procurement document.

A1242 Perform Preventive Maintenance

This activity involves conducting scheduled maintenance required to maintain equipment in a mission-ready status. This incorporates performing regular systematic servicing, parts replacement, safety testing, performance testing, calibration checks, minor repairs, cleaning, detection of potential equipment malfunctions, and recording these maintenance actions in an equipment maintenance history record.

A1243 Repair Equipment

This function entails conducting equipment repairs as a result of deficiencies noted during scheduled preventive maintenance or unscheduled maintenance action requested by an equipment user. The repair action will produce safe, usable, and mission-ready equipment. When determining the practicality of repair, factors such as age, item type, projected life expectancy, replacement cost, obsolescence, past repair history, repair cost, and urgency of need are considered.

A1244 Train Users

Train Users is the activity of arranging equipment training for customers and biomedical equipment repair personnel.

A125 Redistribute/Dispose Equipment

This activity identifies and reports serviceable and unserviceable excess equipment, determines condition code, and determines and executes the appropriate disposition action. This process may involve redistribution and shipment of excess assets to another organization, or submission of these assets to a DRMO for further redistribution, sale, or disposal.

A13 Manage Medical Facilities

This activity assures the availability, reliability, sustainability, and readiness of facilities needed to support the medical mission. The main activities of Manage Medical Facilities are assessing requirements, administering facility services, and maintaining the facility infrastructure. Periodic maintenance and repair schedules, minor construction, and operational programs are developed and executed to maintain mission-ready facilities in support of the medical mission.

A131 Assess Requirements

Assess Requirements evaluates customer requests for facility resources. This includes, but is not limited to: space utilization, fire and safety codes, new equipment requirements, work descriptions and justifications, and project development. The overall strategic facility planning process is a critical element in assessing requirements.

A1311 Arrange Requirements

This is an evaluation process to determine appropriate channels to satisfy requirements. The evaluation process also includes verifying the project descriptions. A need may arise that can be satisfied internally, or it may require the development of an alternative solution, such as developing a project that may require funding beyond an organization's obligation authority.

A1312 Develop Projects

This activity develops, evaluates, approves, and refines project alternatives. Projects may encompass facility renovations, alterations, and TPF support for equipment acquisitions.

A13121 Develop Alternatives

This activity generates and records alternatives for a project by analyzing its impact on the medical community. Factors in this process are assessing functionality; expanding existing spaces; acquiring space and services from an outside source; and evaluating interior design, signage, and communication systems.

A13122 Select Alternative

This is the evaluation of each alternative package submitted for approval, using criteria such as the available resources, mission disruption, feasibility of execution, and prior commitments. The approved alternatives result in facilities requirements that are to be submitted for prioritization and funding. The remaining alternatives may be further refined, developed, or rejected.

A13123 Refine/Design Alternative

This activity creates technical design specifications, validates the scope, defines criteria and changes which may affect the existing alternatives. The approved alternative results in facility requirements being submitted for prioritization and funding. The remaining alternatives may be further developed or rejected.

A1313 Prioritize Requirements

This activity establishes a priority list of approved projects based on the ability to perform the task and support the mission. The end result is either a requirement package with a priority designation, or a rejected requirement.

A1314 Update Facility Master Plan

This activity requires the continuous update of programs, long range plans, local master plans, goals, and objectives based on changed or completed requirements in order to maintain a current facility master plan.

A132 Administer Facility Services

This activity conducts and monitors building operations such as quality control inspections, drills, compliance with existing policies and directives, and employee training. This includes compilation of records and transitional requirements necessary to maintain a mission-ready facility and related support facilities. Several key programs include safety, fire prevention, waste management, security, key control, transportation, precious metal recovery, linen management, facility transition, and housekeeping management.

A1321 Program Activity Services

The primary elements in Program Activity Services involve programming, resourcing, and administering the existing support services and implementing their respective programs, (e.g., safety, fire prevention, waste management, security, key control, transportation, precious metal recovery, linen management, facility transition, and housekeeping management).

A1322 Monitor Service Schedules

This activity observes and documents the support service programs to ensure the organization's compliance with all the required performance and regulatory criteria for drills, inspections, tests, cleaning, reports, and disposal. All references to unsatisfactory service performance or delayed work schedules should be documented and corrective actions taken.

A1323 Evaluate Program Performance

This function compares the level of performance for all support services against acceptable standards for maintaining a mission-ready facility and updating programs as required. Facilities with noted deficiencies are further assessed and corrective actions taken as required. These support service evaluations will be referred to when processing new requirements or renewing existing service contracts.

A133 Maintain Facility Infrastructure

The sustainment of a facility infrastructure in a mission-ready posture involves several factors. These factors include managing preventive maintenance programs, performing minor construction and repair, maintaining building and grounds, and managing building systems and utilities distribution.

A1331 Manage Building Systems

This activity manages the provision of utilities and building systems and their distribution (e.g., heating, ventilation, and air conditioning (HVAC), plumbing, lighting, electrical, emergency systems, fire alarms, water, sewer, and gases) to maintain a mission-ready facility. This activity includes programming, reporting, and resourcing. A designated plan of maintenance is generated for building systems components. Work orders are generated for system breakdowns or failures between scheduled maintenance periods.

A1332 Coordinate Repairs

This activity coordinates repairs, minor construction projects, work orders, service orders, and other requirements involving time, money, and other facility services and operations to maintain a mission-ready facility. Repairs beyond the capability of in-house resources are performed on a request for outsource services within existing program and funding constraints.

A1333 Conduct Preventive Maintenance

This activity conducts scheduled preventive maintenance required to maintain facilities in a mission-ready status. The primary elements of this activity are scheduled services, parts replacement, safety testing, performance testing, calibration checks, minor repairs, cleaning, detection of potential equipment malfunctions, and recording of these maintenance actions as part of the facility maintenance history. Identified deficiencies are reported for appropriate corrective action.

A2 Manage Information

Logistics information is assembled and packaged in a usable format in response to an internal or external requirement. The primary elements of this activity are controlling access to information, and collecting, updating, analyzing, providing, and disposing of information. This activity excludes tasks performed in other activities which create information as an inherent part of that task.

A21 Control Access

Control Access verifies whether a request for information violates security classifications or other restrictions to access. If the request is in violation of access rules, it is rejected. Validated requirements are further processed and information is produced.

A22 Collect/Update Information

Collect/Update Information coordinates the activities that gather and maintain current information in a usable format. This involves collecting and verifying the accuracy of information from internal and external sources. Catalog information is one type of information essential to providing Medical Logistics support.

A23 Analyze Information

Analyze Information deals with the research of updated information in order to ensure an accurate and appropriate response to a customer's needs. As information is transformed, it is sorted, collated, compared, validated, and calculated. This transformation results in assimilated information which is often new information and must be included in the update process. Outdated information is marked for updating, deletion, disposal, or destruction.

A24 Provide Information

Provide Information involves preparing a response to a request for information. Updated and assimilated information is packaged in a usable form to support the decision making process or to provide customer support information.

A25 Dispose Information

This activity eliminates outdated information in accordance with the federal records retention guidance and the *Defense Disposal Manual*.

A3 Manage Outsourced Services

The primary elements in this activity are reviewing the Medical Logistics organization's internal capability, determining alternate outsource options, performing outsource options, and administering outsourced services. The acquisition of an outsource service is initiated by a customer requirement that has been reviewed and determined to be outside the capability of Medical Logistics. This could include submitting a request for contractual procurement to an outside contracting organization, submitting a requisition to the supply system, requesting services under a Memorandum of Understanding (MOU) with another military organization or Service, or awarding orders to vendors (when authorized) under existing delivery order contracts. An internal evaluation is maintained on the performance and execution of outsource services for future use in requesting additional service.

A31 Review Internal Capability

This activity evaluates the capabilities of Medical Logistics personnel and assets to determine whether the materiel, real property, or support services requested can be provided more effectively from within the organization. If these services can be provided internally, a request for outsource services becomes a rejected requirement.

A32 Determine Outsource Option

Determine Outsource Option involves selecting the best method and resources for acquiring materiel, real property, or services from an outside organization or agency (e.g., MOU, Inter-Service Support Agreement (ISSA), purchase order, or contract). The materiel or service requirement is formatted and submitted as a request for materiel, real property, or support services.

A33 Execute Outsource Option

This is the process of formalizing the selected outsource option. A request is produced for materiel, real property, or support services from an outside organization, agency, or contractor. Upon receipt of acknowledgement of the ability to provide the requested support services, an outsource agreement in the form of an MOU or ISSA may be negotiated and signed to obtain services. When the dollar value for the materiel, real property, or support services exceeds the local Medical Logistics purchase authority, requests for contractual procurement are forwarded to an outside organization. When this occurs, the outside contracting organization will perform the execution of an outsource option and contract for the materiel or services to be delivered.

A331 Complete Outsource Package

This is the process of completing all required forms and justifications for submission to an outside organization or agency. Completion of performance work statements, statements of work, and sole source justifications are examples of documents which are prepared to accomplish this activity.

A332 Perform Technical Review/Source Selection

This is the process of evaluating technical characteristics, cost, and the ability to perform and deliver goods or services. This includes performing technical evaluations of bids or requests for proposals, or participating in the source selection process when requested by the contracting organization.

A333 Place Order

Upon receipt of an accepted outsource, this activity creates an obligation to obtain the required materiel, real property, or services. The selected outsource may be other government organizations, agencies, vendors, or other external sources.

A34 Administer Outsource Option

Elements in this activity include providing contracting officer representative oversight of deliverables (e.g., health care services, supplies, equipment, or real property) and the acceptance of deliverables upon completion. This process also includes placing delivery orders against a prenegotiated outsource agreement (e.g., Blanket Purchase Agreement (BPA) indefinite delivery order contracts, Federal Supply Services (FSS) contracts, Emergency Service Agreement, or Maintenance Service Agreement).

A4 Conduct Financial Operations

Conduct Financial Operations utilizes the Planning, Programming, and Budgeting System (PPBS) to budget and obtain financial resources to provide Medical Logistics support. The process includes ensuring that adequate funds are forecasted, requested, distributed, and administered throughout each of the logistics functional areas in support of the MHSS mission. It also includes processing of financial data transactions throughout these activities and through the financial systems of the Services.

A41 Request Funds

This activity involves determining, justifying, and submitting funding resource requirements within the DoD PPBS process. To determine funding requirements individual needs are added in like accounting classifications or appropriations. Justification is a narrative description to support the total requirement in each accounting classification. These requirements are then submitted through the appropriate comptroller channels. Requested funds may consist of Operations and Maintenance (O&M) funds (including Real Property Maintenance Activity (RPMA) fund); stock fund authorizations; and Military Pay, Other Procurement, and Military Construction (MILCON) appropriations.

A42 Assign Funds

Once authorized funding levels are received from the comptroller, the approved funds are assigned to validated requirements in accordance with established priorities to produce funded requirements. If requirements are not funded, they must be revalidated and additional funds reprogrammed or requested.

A43 Administer Finances

Administer Finances includes managing fund authorizations, maintaining fund balances, and reporting financial transactions through the financial systems. Factors in this activity are providing financial information and reports to customers or higher echelons, performing internal financial processes, and processing financial paperwork transactions that trigger payments to be disbursed as a result of acquiring supplies, equipment, facilities, and services ordered, received, and accepted.

Appendix E

ICOM Definitions

This Appendix provides definitions of the ICOMs defined in the modeling sessions. As a basis for this Appendix, the ICOM definitions from the Medical Logistics Baseline/Scoping Workshop were reviewed and validated. As a result of this review, many of the original ICOM definitions were modified to reflect the changes made to the activity models.

The ICOMs are listed alphabetically. Listed below each definition are the activities that use the ICOMs. Table E-2 represents a numeric activity index. This index provides a reference for readers to use when reviewing the ICOM definitions and the activities using the ICOM.

Table E-2. Numeric Activity Index

Activity Number	Activity Name	Activity Number	Activity Name	Activity Number	Activity Name
A0	Provide Medical Logistics Support	A122	Acquire Equipment	A1323	Evaluate Program Performance
A1	Control Medical Assets	A1221	Determine Acquisition Strategy	A133	Maintain Facility Infrastructure
A11	Manage Medical Supplies	A1222	Monitor Procurement Status	A1331	Manage Building Systems
A111	Order Supplies	A1223	Receive Equipment	A1332	Coordinate Repairs
A1111	Process Customer Request	A123	Account for Equipment	A1333	Conduct Preventive Maintenance
A1112	Procure Supplies	A124	Maintain Equipment	A2	Manage Information
A1113	Monitor Due-ins	A1241	Perform Initial Inspection	A21	Control Access
A112	Receive Supplies	A1242	Perform Preventive Maintenance	A22	Collect/Update Information
A113	Stock Supplies	A1243	Repair Equipment	A23	Analyze Information
A1131	Determine Stock Level Requirements	A1244	Train Users	A24	Provide Information
A1132	Assure Quality Product	A125	Redistribute/Dispose Equipment	A25	Dispose Information
A1133	Redistribute/Dispose Supplies	A13	Manage Medical Facilities	A3	Manage Outsourced Services
A114	Issue Supplies	A131	Assess Requirements	A31	Review Internal Capability
A1141	Monitor Due-outs	A1311	Arrange Requirements	A32	Determine Outsource Option
A1142	Pick Issues	A1312	Develop Projects	A33	Execute Outsource Option
A1143	Arrange Outshipment	A13121	Develop Alternatives	A331	Complete Outsource Package
A1144	Deliver Supplies	A13122	Select Alternative	A332	Perform Technical Review/Source Selection
A12	Manage Medical Equipment	A13123	Refine/Design Alternative	A333	Place Order
A121	Identify/Review Requirements	A1313	Prioritize Requirements	A34	Administer Outsource Option
A1211	Assist the Customer	A1314	Update Facility Master Plan	A4	Conduct Financial Operations
A1212	Evaluate Requirements	A132	Administer Facility Services	A41	Request Funds
A1213	Document Priorities	A1321	Program Activity Services	A42	Assign Funds
A1214	Obtain Approval	A1322	Monitor Service Schedules	A43	Administer Finances

Accepted Equipment

Equipment entering a medical activity that has passed testing for serviceability, functional utility, reliability, and safety. This includes equipment that has not previously been furnished to an individual or organization or previously issued equipment re-entering the system. In the case of initial issue of equipment, contract completeness has been verified and a maintenance history record has been initiated.

Input: A123
Output: A124, A1241

Accepted Outsource

An outside organization that has been selected to furnish the requested materiel or service.

Input: A333
Output: A332

Account Balance

The revised fund balance after records have been updated as a result of processing financial data transactions concerning obligations or receipt of funds.

Control: A1, A11, A111, A1111
Output: A4, A43

Acquisition Status

The current acquisition and delivery status of medical equipment and its associated TPF resources.

Input: A1222
Output: A1221

Alternatives for Development

Additional options to previous alternatives that were not selected.

Input: A13121
Output: A13122, A13123

Alternatives Package

Project alternatives that will satisfy the original request but vary in the resources needed for accomplishment.

Input: A13122
Output: A13121

AMEDDPAS (Army Medical Department Property Accounting System)

An Army automated system which supports property accounting and equipment maintenance.

Mechanism: A123, A125, A1211, A1212, A1213, A1222, A1223, A1241, A1242, A1243, A1244, A21, A22, A23, A24

Approved Equipment Request

A requirement for equipment which may be satisfied by repair or redistribution of existing assets.

Input: A124, A125, A1243

Output: A121, A1211

Approved Issue

Proper authority to release materiel as a result of processing a funded requirement for materiel.

Input: A114, A1141, A1142

Output: A111, A1111

Approved Order

Proper authority given to obtain materiel to satisfy a customer requirement.

Input: A112

Output: A111, A1112

Approved Supply Request

A customer request submitted for a supply item that has been validated and justified.

Input: A1112

Output: A1111

Assigned Funds

Authorized funds distributed against validated requirements.

Input: A43

Output: A42

Assimilated Information

Data or information that is extracted, analyzed, and formatted from updated information in response to a request for information.

Input: A22, A24

Output: A23

Authorized Funding Levels

Funding that is authorized from outside Medical Logistics and is strictly controlled by higher authority.

Input: A42

BIOFACS (Biomedical and Facilities Systems)

An automated system used by the Navy to support property accounting and equipment management.

Mechanism: A112, A1113, A1131, A1141, A1142, A123, A125, A1211, A1212, A1213, A1221, A1241, A1242, A1243, A1244, A21, A22, A23, A24, A25, A31, A32, A42, A43

By-products

Items that are taken to disposal or destroyed because they are excess, unserviceable, or expired. This includes, but is not limited to: facilities, information, equipment, supplies, and all types of waste including industrial, regulated medical, and general waste.

Output: A-0, A1, A2, A11, A12, A13, A113, A1132, A1133, A125, A131, A132, A133, A1312, A13122, A1321, A1331, A1332, A1333, A25

Clinical Guidance

Medical and dental clinical judgement used in prioritizing and managing medical resources to meet the established standards of care.

Control: A-0, A1, A2, A3, A11, A12, A13, A111, A113, A1111, A1112, A1131, A1132, A23, A31, A32, A33, A34, A331, A332

Condition-coded Excess Equipment

Equipment no longer required in the mission of the health care facility or in excess of the authorized quantity for retention. This equipment is classified as either serviceable, unserviceable, not functionally usable, unreliable, or unsafe.

Input: A125

Output: A124, A1241, A1242, A1243

CPD (Central Processing and Distribution System)

A tri-service automated system which supports supply processing and distribution.

Mechanism: A112, A1111, A1112, A1113, A1131, A1133, A1141, A1142, A22, A23, A24

Customer Requirement

Needs identified by the customer in support of the medical mission. A customer may be an organization, an agency, or an individual (both internal and external).

Input: A-0, A1, A2, A3, A11, A12, A13, A111, A1111, A121, A1211, A131, A1311, A21, A31

Customer Requirements Package

A completed equipment request package that represents the customer's equipment requirements.

Input: A1212

Output: A1211

Customer Support Information

Information packaged in a usable form to meet customer's needs. It can be logistics, decision support, or strategic planning information. Examples of logistic information include cataloging and safety recall information; decision support information includes performance indicators, readiness posture, and budget information; strategic planning information includes workload and contingency planning information.

Output: A-0, A2, A24

Data/Information

Data used in providing Medical Logistics support. This includes, but is not limited to: performance, contract, clinical and patient information, as well as asset visibility on supplies, equipment, or facilities.

Input: A-0

Deficiency

A problem adversely affecting the medical mission which requires Medical Logistics support.

Input: A1243, A131, A1311

Output: A1241, A1242, A132, A133, A1323, A1331, A1332, A1333

Delivered Equipment

Items of equipment received from vendors, assembly operations, supply depots, and other sources.

Input: A123

Output: A122, A1223

Delivery Status

Information pertaining to the scheduled delivery of equipment.

Input: A1223
Output: A1222

Direct Turnover

Supplies not carried in inventory which are ordered for a specific customer and issued directly to the customer.

Input: A114, A1142, A1143
Output: A112

Disposal Document

The auditable document used to adjust equipment accounting records as a result of transferring equipment to the DRMO.

Input: A123
Output: A125

Due-in Status

Supply or delivery information on the anticipated receipt of materiel (e.g., estimated delivery date, shipment mode, cancellation notifications, or backorder release dates).

Control: A113, A1112, A1131
Output: A111, A1113

Due-out Status

Information that identifies materiel that is backordered for a customer due to insufficient on-hand quantities.

Control: A1142, A1143
Output: A1141

Equipment Awaiting Inspection

Equipment entering the medical system not previously furnished to an individual or organization or excess equipment reentering the system that will receive testing for serviceability, functional utility, reliability, and safety. In the case of initial issue equipment, contract completeness is verified and a maintenance history record is initiated.

Input: A124, A1241
Output: A123

Equipment Facility Request

A request for facility support based on the requirements generated by new or modified equipment.

Input: A13
Output: A12, A121, A122, A124, A1212, A1221, A1241

Facility

An entity consisting of a building, structure, utility system, and underlying land with specific criteria to sustain a medical mission.

Input: A-0, A1, A13, A131, A132, A133, A1312, A13121, A13123, A1321, A1331, A1332, A1333

Facility Acquisition Information

Compiled information or raw data (e.g., facility, workload and patient care, costs, resource management, personnel, or regional information) that is required to support the facility acquisition process. Providing the information is an iterative process and may require financial and personnel resources.

Output: A-0, A2, A24

Facility Information

Information pertaining to an alteration to ensure the facility is ready for the installation and operation of equipment when it is delivered.

Input: A1222

Failed Preventive Maintenance

A building, piece of equipment, or system component that does not meet established criteria and requires repair or replacement.

Input: A1332
Output: A1333

Financial Data

Information and financial transactions that interface with the Services' financial accounting system.

Input: A4, A43
Output: A1, A3, A11, A12, A111, A112, A113, A114, A1111, A1112, A1131, A1132, A1133, A1141, A1142, A122, A123, A1221, A33, A34, A333

Financial Resources

Monetary assets that have been planned, programmed, budgeted, and provided to the Medical Logistics community.

Mechanism: A-0, A42

Fiscal Guidance

Monetary policy, direction, decision, or instruction that acts as an order. Guidance is disseminated through yearly appropriation acts, authorization acts, Program Budget Decisions (PBDs), and Defense Management Review Decisions (DMRDs). This includes the budget developed and submitted through the PPBS.

Control: A-0, A41

Funded Requirement

A validated requirement against which funds from the applicable appropriation(s) and adequate resources have been authorized and committed based on current priorities.

Input: A1, A2, A11, A12, A13, A111, A1112, A122, A124, A1221, A1243, A131, A132, A133, A1312, A13121, A13122, A13123, A1321, A1331, A1332, A1333, A22

Control: A41, A43

Output: A4, A42

GFM (Government Furnished Materiel)

Items of supply, equipment, or facilities furnished by the government to a vendor to perform an outsource agreement.

Input: A3, A34

Output: A1

GFM Information

Information concerning materiel provided by the government in the performance of a contractual agreement with another government agency, or commercial vendor. This includes, but is not limited to: facilities, utilities, building space, equipment, or supplies.

Control: A33, A331

Incoming Catalog Data

Information received from external cataloging sources to update internal catalog records.

Input: A22

Information Management System

Automated systems used in Medical Logistics to process data into useful information to support the mission.

Mechanism: A-0, A1, A2, A3, A4, A11, A12, A111, A112, A113, A114, A1111, A1112, A1113, A1131, A1132, A1133, A1141, A1142, A121, A122, A123, A124, A125, A1211, A1212, A1213, A1214, A1221, A1222, A1223, A1224, A1241, A1242, A1243, A1244, A21, A22, A23, A24, A25, A31, A32, A33, A34, A333, A42, A43

Infrastructure Constraint

Building or real property limitations or restraints affecting the ability to properly administer facility services and programs. This may be a real property deficiency or operation that requires a modification of facility services.

Control: A132, A1321
Output: A133, A1331, A1332, A1333

Internal Information Request

A demand for information placed by one functional area of Medical Logistics against another.

Input: A2, A21
Output: A1, A3, A4, A11, A12, A13, A31, A43

Issued Materiel Information

Information that results in the adjustment of stock record balances and adjusts the computation of revised inventory levels as a result of materiel being provided to the customers. If the stocked item is not available in sufficient quantities to release an issue a warehouse refusal is generated as a type of issued materiel information.

Input: A113, A1131
Output: A114, A1142, A1144

Laws, Directives, Policies

Written or verbal communication in which a specific action is ordered that governs an entity's conduct or procedures. This includes congressional mandates, service regulations, manuals, operating procedures, codes and standards, accreditation requirements, federal regulations, practice standards, notices, newsletters, command and other guidance.

Control: A-0

Logistics Facilities

Real property, space, or assemblies (deployable medical systems) used by Medical Logistics personnel to carry out their mission.

Mechanism: A-0

Logistics Information

Any data that results from performing Medical Logistics functions. Some examples of this data are budget and programming information, planning papers, management and performance reports, research information, accreditation documents, and equipment repair history. This information is often used to produce customer support information.

Input: A2, A22

Output: A1, A3, A11, A12, A13, A31, A32, A33, A34

Logistics Information Request

A request for data pertaining to logistics, such as budgeting, programming, planning papers, management reports, performance reports, research information, accreditation documents, and equipment or facility repair history.

Input: A1, A3, A4, A11, A12, A13, A111, A1111, A121, A1211, A131, A1311, A34, A43

Output: A2, A22

Logistics Materiel

Assets such as vehicles, materiel handling equipment, and other supplies and equipment used to provide Medical Logistics support.

Mechanism: A-0

Logistics Personnel

Personnel required to complete the mission of Medical Logistics.

Mechanism: A-0

Materiel

Consumable and non-consumable items that are attributable to an organization, to include items in transit which become property when received and processed.

Input: A-0, A1, A11, A12, A13, A112, A122, A1223, A132, A133, A1321, A1331, A1332, A1333

Medical Market/Technology

The state of the medical industry's capabilities. This includes distribution channels, administrative practices, manufacturing capability, and de facto standards of care (i.e., legal implications).

Control: A-0, A1, A2, A3, A11, A12, A13, A111, A1112, A23, A31, A32, A33, A331, A332

MEDLOG (Medical Logistics System)

An Air Force automated system which supports supply and equipment activities.

Mechanism: A112, A1111, A1112, A1113, A1131, A1132, A1133, A1141, A1142, A123, A125, A1211, A1212, A1213, A1214, A1221, A1222, A1223, A1241, A1242, A1243, A1244, A21, A22, A23, A24, A31, A34, A333, A42, A43

MEDLOG JR (Medical Logistics JR System)

An Air Force automated system which records and restratifies unofficial inventories for supply items only. It electronically interfaces with the MEDLOG System.

Mechanism: A112, A1111, A1112, A1113, A1131, A1133, A1141, A1142, A21, A22, A23, A24, A31, A34, A333, A43

MICRO-MICS (Micro-Medical Inventory Control System)

A Navy automated inventory management system used for medical treatment facilities operating without a Navy Stock Fund.

Mechanism: A112, A1112, A1113, A1131, A1132, A1133, A1142, A22, A23, A24, A31, A32

MICS (Medical Inventory Control System)

A Navy automated inventory management and financial accounting system for medical treatment facilities operating a Navy Stock Fund.

Mechanism: A112, A1112, A1113, A1131, A1132, A1133, A1142, A22, A23, A24, A31, A32

Mission-ready Equipment

Equipment that is capable of fulfilling its intended mission and is reliable and safe.

Control: A13, A131, A132, A133, A1311, A1312, A1313, A1314, A13121, A13122, A13123, A1321, A1322, A1323, A1331, A1332, A1333

Output: A-0, A1, A12, A123, A124, A1241, A1242, A1243

Mission-ready Facility

A properly sized, maintained, and administered health care entity capable of fulfilling its assigned mission.

Control: A12, A121, A122, A124, A125, A1212, A1213, A1221, A1241, A1243

Output: A-0, A1, A13, A132, A133, A1323, A1331, A1332, A1333

Mission-ready Supplies

Medical supplies available to support the patient care mission.

Input: A3, A12

Output: A-0, A1, A11, A114, A1144

On-hand Equipment Information

Information regarding equipment assets controlled within the system, including requisitioning, receipt, storage, control, shipment, disposition, identification, maintenance, and accounting.

Input: A124, A1241
Output: A123

Operation Constraint

Restrictions imposed by higher authority or established programs that affect facility operations or functions.

Control: A133, A1331
Output: A132, A1321, A1323

Operation Plan Adjustment

Incoming changes to long range facility plans in the form of modified or new objectives and goals.

Input: A1314
Output: A1311

Outdated Information

Data or information that is no longer current or necessary.

Input: A25
Output: A23

Outside Budget Request

A budget submission forwarded outside Medical Logistics providing prioritized needs and justifications to request specific types of appropriated funds to perform the Medical Logistics mission.

Control: A42
Output: A41

Outsource Agreement

A resulting contract, support memorandum, or agreement between the medical organization and other government or commercial sources to obtain supplies, services, facilities, information, or equipment.

Input: A1113, A34
Output: A1112, A33, A333

Outsource Appraisal

The evaluation of an outsource deliverable for quality, timeliness, and compliance with the established terms, conditions, specifications, and standards specified in the outsource agreement or contract.

Control: A33, A332
Output: A34

Outsource Deliverable Information

Information about supplies, services, facilities, or equipment ordered and/or received from an outside source. This includes, but is not limited to: status reports, documents, or brochures.

Input: A1, A2, A11, A12, A13, A112, A122, A124, A1222, A1241, A1242, A1243, A1244, A131, A132, A133, A1312, A1313, A1314, A13121, A13122, A13123, A1321, A1322, A1323, A1331, A1332, A1333, A22
Output: A3, A34

Outsource Modification Request

A request to amend or modify an agreement with other government agencies or a commercial vendor for supplies, services, facilities, information, or equipment.

Input: A33, A332
Output: A34

Outsource Request

A request for the delivery of supplies, services, facilities, information, or equipment from an outside organization.

Input: A3, A32, A34
Output: A1, A2, A11, A12, A13, A111, A1112, A122, A124, A1221, A1241, A1242, A1243, A131, A132, A133, A1311, A1312, A1313, A1314, A13121, A13122, A13123, A1321, A1322, A1323, A1331, A1332, A1333, A22, A31

Parts

Individual components used in the repair of equipment.

Input: A12, A124, A1242, A1243
Output: A11, A114, A1144

Parts Request

A request for a part necessary to make a piece of equipment mission-ready.

Input: A12
Output: A11, A124, A1242, A1243

Payment Certification

A notice to the activity comptroller that a payment should be made for the receipt and acceptance of materiel or services.

Output: A43

Performance Feedback

Post evaluation data concerning performance and types of support service programs that are integral to Administering Facility Services.

Control: A1321

Output: A1323

Performance Information

Information obtained through various reports used for evaluating the level of performance being rendered by the support services and the extent to which the support services enable the facility to carry out its mission.

Input: A1323

Output: A1322

Performed Program Services

A properly authorized function that contributes directly to the overall operation of medical facilities. These functions include safety, fire protection, security and key control, waste management, precious metals recovery, linen management, transportation, and housekeeping management.

Input: A1322

Output: A1321

Picked Items

Supplies drawn from stock for distribution.

Input: A1143

Output: A1142

Plans and Missions

The medical component of DoD contingency plans to include force structure, outfitting, mobility, and transition plans. In peacetime, these plans state the optimal use of medical resources and directed missions to meet beneficiary needs.

Control: A-0

PMBS (Property Management and Budgeting System)

A Navy automated property management and accounting system.

Mechanism: A123, A1211, A1212, A1213, A1214, A1221, A1223, A22, A23, A24

Preventive Maintenance Program Adjustment

Request to adjust a preventive maintenance schedule as the result of a new, changed, or repaired equipment item or building system.

Input: A1331

Output: A1332

Preventive Maintenance Schedule

A designated schedule and plan to perform maintenance (to include times, procedures, and repair parts) for equipment or building systems components.

Control: A1333

Output: A1331

Prioritized Requirements Package

A requirement that has been reviewed and assigned a priority designation based on the needs of the activity.

Input: A1214, A1314

Output: A1213, A1313

Program Constraint

A policy or budgetary change that affects facility programs or service operations or functions.

Control: A132, A133, A1321, A1331, A1332, A1333

Output: A131, A1311, A1312, A1313, A1314, A13122, A13123

QA Information

Information used to determine the acceptability of materiel for use.

Control: A112

Output: A113, A1132

Receipt Confirmation

Notification of receipt of ordered medical equipment by an authorized representative which includes any noted discrepancies.

Control: A1222

Output: A1223

Rejected/Cancelled Requirement

A disapproved or cancelled requirement for equipment, supplies, facilities, information, or services that is returned to the customer.

Control: A122, A1221

Output: A1, A2, A3, A11, A12, A13, A111, A1111, A121, A1211, A1212, A1214, A131, A1311, A1312, A1313, A13121, A13122, A13123, A21, A31, A32, A33, A332

Replenished Materiel

Materiel ordered and received for the purpose of restocking inventories.

Input: A113, A1131, A1132

Output: A112

Replenished Materiel Information

Information concerning materiel received for the purpose of restocking inventories.

Input: A111, A1111

Output: A113, A1131, A1132, A1133

Reprioritize Requirements Request

A request to reprioritize requirements for equipment based on the review and evaluation process.

Control: A1213

Output: A1214

Reprioritized Requirements Information

Information used to develop alternatives to project requirements.

Control: A1312, A13121, A13122, A13123

Output: A1313

Request for Outsource

A request for an outsource agreement to provide requested supplies, equipment, or services. This may include orders to be placed against existing contracts and agreements.

Input: A33, A331

Output: A32

Request for Refinement

A request for a technical design or for an improvement to a project alternative.

Input: A13123

Output: A13122

Request for Support

A request to an outside organization to determine if it can satisfy the specified requirement. The request could be in the form of a funded requirements package.

Output: A33, A331, A332

Request for Technical Review

A request for a technical review to be performed or a request for source selection.

Input: A332

Output: A331

Requirement for Revalidation

Established needs that have been approved, justified, and prioritized but were not funded. These requirements must be revalidated and prioritized against the current unfunded requirements.

Input: A1, A11, A12, A13, A111, A1111, A121, A1212, A131, A1313

Output: A4, A42

Response to Request for Support

An acknowledgement from an outside organization which confirms or denies its ability to provide the requested support, or a request for additional information.

Input: A33, A34, A332

Reviewed Requirements Package

An equipment or facilities requirement that has been reviewed, evaluated, and forwarded for prioritization and funding consideration.

Input: A1213, A1214, A1313

Output: A1212, A1312, A13122, A13123

Service Discrepancy

A support service that does not meet established schedules or yield satisfactory performance results.

Input: A1321

Output: A1322

Serviceable Excess

Operationally serviceable equipment or supplies that are no longer required by the user for the completion of the mission, or exceed the quantity required or authorized for retention by the health care facility.

Input: A1133, A121, A122, A1212, A1223
Output: A1131, A125

Shipping Items

Material identified to be packed, transported, and delivered.

Input: A1144
Output: A1143

Shortfall

Validated requirements that remain unfunded as a result of insufficient funds to fully satisfy the requirements.

Control: A41
Output: A42

Stock Fund Adjustment

A financial transaction to increase or decrease stock fund balances. Also includes the annual budget submission or special request to the stock fund manager for increases or decreases in the authorized funding level. These revisions are based on actual and anticipated changes in stock fund sales, quarterly stratification reports, projected adjustments generated by changes in anticipated demand, changes in operations, or changes in war reserve levels.

Input: A4, A41
Output: A1, A11, A113, A1131, A1133

Stocked Supplies

Items that are physically carried in an inventory at a facility for the purpose of issuing in response to a customer's request.

Input: A114, A1142
Output: A113, A1131

System Failure

A temporary or permanent outage, breakdown, or failure of a building system or component.

Input: A1332
Output: A1331

TAMMIS (Theater Army Medical Management Information System)

An Army automated supply and equipment support system for contingency and peace time requirements.

Mechanism: A112, A1111, A1112, A1113, A1131, A1132, A1133, A1141, A1142, A1211, A1212, A1241, A1242, A1243, A21, A22, A23, A24

TPF Information

Those resources associated with an equipment requirement which must be made available concurrently for equipment to be placed in useful service. This includes, but is not limited to: qualified staff, mission-ready facilities, training, spare parts, operating supplies, support equipment, and funds to acquire supporting services (e.g., maintenance contracts).

Control: A4, A41, A42
Output: A1, A12, A121, A122, A1212, A1221

Trained Users

Equipment operators or biomedical technicians that have received adequate training to safely operate, maintain, or repair equipment.

Output: A1244

Training Request

A request for training to be provided as a result of receiving new or replacement equipment.

Input: A1244
Output: A1241, A1242, A1243

Unserviceable Supply

Supply items that have failed a quality assurance check, or have been declared not issuable.

Input: A1133
Output: A1132

Updated Facility Master Plan

A revised version of the existing master plan resulting from new or modified facility requirements.

Control: A1311, A1312, A1313, A13121, A13122, A13123
Output: A1314

Updated Information

Data or information which is made current.

Input: A23, A24
Output: A22

Validated Requirement

Established needs that have been approved, justified, and prioritized but require funding in order to be accomplished.

Input: A4, A1112, A22, A41
Output: A1, A2, A11, A12, A13, A111, A1111, A121, A1213, A1214, A131, A1311, A1312, A13122, A13123, A21

Validated Work Request

A requirement for repair, alteration, or service determined to be necessary to satisfy a customer requirement or a facility deficiency.

Input: A1313
Output: A1311

Warehouse Refusal

An approved stock issue for which there is an insufficient quantity on hand to satisfy the requirement. This results in information being forwarded to stock control to reconcile the inventory record discrepancy.

Output: A1142

Work Request

A stated requirement for repair, alteration, or a service.

Input: A1312, A13121
Output: A1311

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Appendix F Information Management System Matrix

This Appendix contains the information management systems matrix completed during the activity analysis. Each leaf node activity was reviewed to determine whether the information management system was actually used when performing the activity.

Activity		Automated Systems								
* Depicts Leaf Node		1	2	3	4	5	6	7	8	9
A0	PROVIDE MEDICAL LOGISTICS SUPPORT									
A1	Control Medical Assets									
A11	Manage Medical Supplies									
A111	Order Supplies									
*	A1111 Process Customer Request			✓	✓	✓				✓
*	A1112 Procure Supplies			✓	✓	✓	✓	✓		✓
*	A1113 Monitor Due-ins		✓	✓	✓	✓	✓	✓		✓
*	A112 Receive Supplies		✓	✓	✓	✓	✓	✓		✓
A113	Stock Supplies									
*	A1131 Determine Stock Level Requirements		✓	✓	✓	✓	✓	✓		✓
*	A1132 Assure Quality Product				✓		✓	✓		✓
*	A1133 Redistribute/ Dispose Supplies			✓	✓	✓	✓	✓		✓
A114	Issue Supplies									
*	A1141 Monitor Due-outs		✓	✓	✓	✓				✓
*	A1142 Pick Issues		✓	✓	✓	✓	✓	✓		✓
*	A1143 Arrange Outshipment									
*	A1144 Deliver Supplies									
A12	Manage Medical Equipment									
A121	Identify/Review Requirements									
*	A1211 Assist the Customer	✓	✓		✓				✓	✓
*	A1212 Evaluate Requirements	✓	✓		✓				✓	✓
*	A1213 Document Priorities	✓	✓		✓				✓	
*	A1214 Obtain Approval				✓				✓	

1. AMEDDPAS
2. BIOFACS

3. CPD
4. MEDLOG

5. MEDLOG JR.
6. MICRO-MCS

7. MCS
8. PMIS

9. TAMBIS

Activity		Automated Systems								
* Depicts Leaf Node		1	2	3	4	5	6	7	8	9
A122	Acquire Equipment									
*	A1221 Determine Acquisition Strategy		✓		✓				✓	
*	A1222 Monitor Procurement Status	✓			✓					
*	A1223 Receive Equipment	✓			✓				✓	
*	A123 Account for Equipment	✓	✓		✓				✓	
A124	Maintain Equipment									
*	A1241 Perform Initial Inspection	✓	✓		✓					✓
*	A1242 Perform Preventative Maintenance	✓	✓		✓					✓
*	A1243 Repair Equipment	✓	✓		✓					✓
*	A1244 Train Users	✓	✓		✓					
*	A125 Redistribute/Dispose Equipment	✓	✓		✓					
A13	Manage Medical Facilities									
A131	Assess Requirements									
*	A1311 Arrange Requirements									
	A1312 Develop Projects									
*	A13121 Develop Alternatives									
*	A13122 Select Alternative									
*	A13123 Refine/Design Alternative									
*	A1313 Prioritize Requirements									
*	A1314 Update Facility Master Plan									
A132	Administer Facility Services									
*	A1321 Program Activity Services									
*	A1322 Monitor Service Schedules									
*	A1323 Evaluate Program Performance									
A133	Maintain Facility Infrastructure									
*	A1331 Manage Building Systems									
*	A1332 Coordinate Repairs									

1. AMEDDPAS
2. BIOFACS

3. CPD
4. MEDLOG

5. MEDLOG JR.
6. MICRO-MCS

7. MCS
8. PMS

9. TANDIS

Activity		Automated Systems								
• Depicts Leaf Node		1	2	3	4	5	6	7	8	9
•	A1333 Conduct Preventive Maintenance									
A2	Manage Information									
•	A21 Control Access	✓	✓		✓	✓				✓
•	A22 Collect/Update Information	✓	✓	✓	✓	✓	✓	✓	✓	✓
•	A23 Analyze Information	✓	✓	✓	✓	✓	✓	✓	✓	✓
•	A24 Provide Information	✓	✓	✓	✓	✓	✓	✓	✓	✓
•	A25 Dispose Information		✓							
A3	Manage Outsourced Services									
•	A31 Review Internal Capability		✓		✓	✓	✓	✓		
•	A32 Determine Outsource Option		✓				✓	✓		
	A33 Execute Outsource Option									
•	A331 Complete Outsource Package									
•	A332 Perform Technical Review/Source Selection									
•	A333 Place Order				✓	✓				
•	A34 Administer Outsource Option				✓	✓				
A4	Conduct Financial Operations									
•	A41 Request Funds									
•	A42 Assign Funds		✓		✓					
•	A43 Administer Finances		✓		✓	✓				

1. AMEDDPAS
2. BIOFACS

3. CPD
4. MEDLOG

5. MEDLOG JR.
6. MICRO-MICS

7. MICS
8. PARS

9. TANDIS

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Appendix G

IDEF Data Modeling Basics

Introduction

This Appendix contains some excerpts from the "Modeling for Managers" course material provided by D. Appleton Company. The contents of this Appendix are included to give the reader a cursory look at the IDEF data modeling techniques (IDEF1X).

Definition

The IDEF1X technique is an approach to data definition and analysis which can be used to understand an organization's business rule structure. The IDEF1X technique supports the discovery and documentation of data elements and their relationships in the enterprise.

The IDEF1X technique is the key to achieving integration. As a result of applying the technique, unique data definitions emerge, which describe the stable structure of an organization's reusable data.

Components Activities

The basic components of an IDEF1X package are the graphic diagrams representing data entities, their relationships and attributes; a glossary that defines the entities and attributes used on the diagrams; and business rule statements which are detailed written descriptions about the data and the manner in which data relate to other data. A more detailed description of the diagram's components follows:

Entities. The entity is the fundamental part of the data model. An entity is a class of people, places, things, or events about which data should be retained. An entity instance is a specific occurrence in a class. An entity is always named using a noun or noun phrase. Entities are illustrated by boxes with the name centered on the outside of the box.

Attributes. The properties of the characteristics that identify or describe entities are called attributes. Attributes are labeled with singular, generic nouns. The attribute, or set of attributes, that uniquely identifies an instance is termed a key; the remaining attributes are referred to as non-key attributes. Keys are displayed above the line in an entity box and non-key attributes are displayed below the line.

Relationships. A relationship shows the association between two entities. A relationship is named using a verb or verb phrase that describes the nature of the association. It is shown as a line that connects the two entity boxes. A relationship also has cardinality, which indicates how many instances of one entity can be related to an instance of another entity. Relationship cardinality is represented by a dot at one or both ends of the relationship line. In a binary relationship, the entity at the top of the straight line is referred to as the parent and the entity at the end with the dot is known as the child of the relationship.

Levels

Data models are often categorized by the level of detail that is present in the diagrams. The three levels of models are described below:

Entity-relationship Level. The first, and highest level is an entity-relationship data model. This model focuses on entities and their relationships. This type of model is used to represent a subject area with a larger scope and greater depth. They are also stepping stones to more detailed models.

Key-based Level. The second level is the key-based data model, which adds the unique identifiers (key attributes) to each entity, as well as other refinements to the model's structure. The key-based model takes a smaller scope of the subject area and represents greater depth.

Fully Attributed Level. The third level of the data model is the fully attributed model, which is a candidate for incorporation into the enterprise conceptual schema. While limited in scope, it represents a subject area in its greatest amount of depth and detail. Also, the mode is mathematically normalized for quality control.

Uses

Data models have many uses, the most significant of which is the expression of the enterprise business rules. The business rules are statements that describe and specify the business constraints that an enterprise imposes on its data. By understanding and documenting these rules in a single conceptual model, an integrated enterprise can be built.

Appendix H

Activity Based Costing Spreadsheets

This Appendix contains the spreadsheets that were created as a result of performing the ABC process. Figure H-1 shows that distribution of personnel time across the subactivities. The aggregate personnel costs are shown in Figure H-2. Figure H-3 shows the distribution of materiel, facilities, information technology, and other costs. The aggregate costs for all five categories are shown in Figure H-4.

Activity	Army			Navy			Air Force		
	Officer	Enlisted	Chillan	Officer	Enlisted	Chillan	Officer	Enlisted	Chillan
A0 PROVIDE MEDICAL LOGISTICS SUPPORT	847	2,839	2,179	70	782	897	228	2,144	817
	100%	100%	100%	100%	100%	100%	100%	100%	100%
A1 CONTROL MEDICAL AFFAIRS	60%	54%	70%	25%	10%	60%	45%	54%	65%
A11 MANAGE MEDICAL SUPPLIES	30%	46%	46%	10%	30%	30%	5%	60%	60%
A111 ORDER SUPPLIES	6%	10%	28%	4%	7%	14%	1%	16%	16%
A112 RECEIVE SUPPLIES	6%	6%	6%	5%	1%	14%	1%	16%	16%
A113 STOCK SUPPLIES	6%	12%	10%	5%	7%	14%	1%	20%	20%
A114 ISSUE SUPPLIES	10%	12%	6%	5%	5%	14%	1%	19%	19%
A12 MANAGE MEDICAL EQUIPMENT	27%	20%	12%	25%	40%	6%	15%	16%	16%
A121 IDENTIFY/REVIEW REQUIREMENTS	6%	4%	4%	10%	6%	5%	10%	4%	6%
A122 ACQUIRE EQUIPMENT	2%	4%	4%	10%	5%	5%	5%	4%	6%
A123 ACCOUNT FOR EQUIPMENT	6%	6%	4%	1%	2%	1%	0.79%	3.50%	3.50%
A124 MAINTAIN EQUIPMENT	6%	6%	4%	1%	2%	1%	1%	6%	5%
A125 REDISTRIBUTE/REPAIR EQUIPMENT	2%	6%	4%	5%	6%	2%	0.39%	0.30%	0.30%
A13 MANAGE MEDICAL FACILITIES	6%	6%	19%	0%	0%	0%	0%	4%	4%
A131 ADDRESS REQUIREMENTS	2%	1%	2%					1.50%	1.50%
A132 ADMINISTER FACILITY SERVICES	1%	5%	4%					5%	5%
A133 MAINTAIN FACILITY INFRASTRUCTURE	2%	6%	6%					0.30%	0.30%
A3 MANAGE INFORMATION	25%	6%	16%	60%	30%	15%	40%	4%	4%
A31 CONTROL ACCESS	2%	4%	1%	1%	1%	0.30%	0.30%	0.30%	0.30%
A32 COLLECT/UPDATE INFORMATION	4%	5%	3%	6%	6%	4%	5%	5%	5%
A33 ANALYZE INFORMATION	11%	1%	3%	20%	6%	3%	20%	1%	1%
A34 PROVIDE INFORMATION	6%	2%	3%	2%	6%	4%	3%	0.30%	0.30%
A35 DISPOSE INFORMATION	1%	1%	1%	1%	1%	1%	0.30%	0.30%	0.30%
A4 MANAGE OUTSOURCES SERVICES	16%	6%	6%	16%	7%	5%	5%	15%	15%
A41 REVIEW INTERNAL CAPABILITY	2%			4%	1%	1%	5%	0.30%	0.30%
A42 DETERMINE OUTSOURCE OPTION	5%		1%	4%	1%	1%	5%	0.30%	0.30%
A43 EXECUTE OUTSOURCE OPTION	5%		4%	1%	5%	6%	6%	6%	6%
A44 ADMINISTER OUTSOURCE OPTION	5%	6%	5%	1%	5%	6%	1%	5%	5%
A5 COLLECT/RECORD OPERATIONS	7%	6%	7%	5%	5%	5%	5%	5%	5%
A51 REQUEST FUNDS	2%		1%	5%	1%	1%	1%	1%	1%
A52 ASSIGN FUNDS	5%		5%	1%	1%	1%	5%	0.30%	0.30%
A53 ADMINISTER FINANCES	1%	6%	4%	2%	1%	1%	1%	0.30%	0.30%

• No percentage was allocated to the activity Manage Medical Facilities because the authorized numbers do not reflect the personnel employed in facility or spending management.

Figure H-1. Personnel Time Distribution

Activity	Material					Facilities	Info Tech	Other	
	Mgmt and Support	Stock Fund Holding	Replenishment	Transportation					
A0 PROVIDE MEDICAL LOGISTICS SUPPORT	\$31.0	\$108.9	\$1,014.2	\$4.9	\$86.9	\$14.7			Continued
	100%	100%	100%	100%	100%	100%			100%
A1 COURTESY MEDICAL ASSETS	7%	100%	100%	100%	61%	6%			6%
A11 MANAGE MEDICAL SUPPLIES	4%	100%	100%	60%	72%	36%			2%
A111 ORDER SUPPLIES	1%					1%			
A112 RECEIVE SUPPLIES	6%					6%			
A113 STOCK SUPPLIES	12%	100%				12%			
A114 ISSUE SUPPLIES	11%					7%			
A12 MANAGE MEDICAL EQUIPMENT	5%	6%	6%	10%	19%	36%			11%
A121 IDENTIFY/REVIEW REQUIREMENTS	4%					2%			
A122 ACQUIRE EQUIPMENT	4%					6%			
A123 ACCOUNT FOR EQUIPMENT	4%					19%			
A124 MAINTAIN EQUIPMENT	6%					19%			
A125 REDISTRIBUTE/RESPONSE EQUIPMENT	2%					2%			
A13 MANAGE MEDICAL FACILITIES	6%	6%	6%	6%	4%	6%			2%
A131 ASSESS REQUIREMENTS	2%								
A132 ADMINISTER FACILITY SERVICES	2%								
A133 MAINTAIN FACILITY INFRASTRUCTURE	4%								
A2 MANAGE INFORMATION	12%	6%	6%	6%	2%	37%			6%
A21 CONTROL ACCESS	1%					1%			
A22 COLLECT/UPDATE INFORMATION	2%					14%			
A23 ANALYZE INFORMATION	4%					6%			
A24 PROVIDE INFORMATION	4%					6%			
A25 DISPOSE INFORMATION	1%					1%			
A3 SERVICE OUTSOURCED SERVICES	2%	6%	1%	1%	6%	1%			30%
A31 REVIEW INTERNAL CAPABILITY	1%					1%			
A32 DETERMINE OUTSOURCE OPTION	1%					1%			
A33 EXECUTE OUTSOURCE OPTION	4%					1%			
A34 ADMINISTER OUTSOURCE OPTION	4%					1%			
A4 COURTESY LOGISTICS OPERATIONS	6%	6%	6%	6%	1%	1%			6%
A41 REQUEST FUNDS	1%								
A42 ASSIGN FUNDS	1%								
A43 ADMINISTER FINANCES	2%								

Figures reflect dollars in millions.

Figure H-3. Distribution of Materiel, Facilities, Information Technology, and Other Costs

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Appendix I Improvement Opportunities

This Appendix contains the improvement opportunities developed as a result of analyzing the ideas identified during the activity modeling sessions. While these opportunities represent sound ideas, they only represent the group's viewpoint and may need to be researched in order to become real business process improvements. Many of these improvement opportunities support the need for a standard integrated automated system and some of these improvements were used to develop the focus area papers.

Improvement Opportunity	Category					
	1	2	3	4	5	6
Budget and financial management is fragmented. Provide an automated and integrated capability for logistics related financial management.	✓					
The required coordinated efforts for TPF are disjointed and do not always assure the requirements are satisfied in an integrated timely manner. This can result in equipment arriving before the facility or accessories necessary to make it operational are available. Authorizations, funding, and procurement processes should be accomplished concurrently and tracked at each level in the process to ensure equipment can be placed in useful service upon receipt.					✓	
Customers must go to different sources within the logistics organization to acquire information, resources, and support. The logistics system needs to provide an integrated interface to the customer and clearly defined points of contact for customer service.	✓					
O&M funds are used to finance unknown quantities of unofficial inventory. This practice impairs the ability to identify true need for official inventories. Unofficial inventories can be nearly eliminated by managing most supply assets up to the point of consumption.	✓					
The Navy does not routinely backorder stocked supplies to their customers. If they can not fill a request from existing stock, the customer is notified, but has to keep reordering the item until it is finally released. The Navy should backorder the item to keep the customer from having to submit repetitive orders and use the backorder quantity to identify requirements.	✓					
Lack of current financial information makes it hard for customers to manage their budget and risks over obligation of authorized funds. Customer and logistics personnel should have easy access to current financial information.	✓					

1. Customer Service
2. Receipt and Distribution

3. Facility Management
4. Equipment Management

5. Acquisition
6. Training

Improvement Opportunity	Category					
	1	2	3	4	5	6
Services' implementation of property accounting and maintenance requirements criteria for durable medical devices are inconsistent. This results in duplicate or incomplete databases, thereby not allowing total asset visibility. Incomplete data records may result in increased medical legal liability. In addition, extensive manpower is needed to maintain and reconcile duplicate databases. Standard accounting and maintenance business rules and data structures need to be adopted in order to eliminate these problems.				✓		
The Navy does not have a system to identify items which have been suspended at the time of receipt. Since it is possible for shipments to be in transit at the time of a recall, this automated feature provides a method to flag an item for quality assurance inspection before it ever reaches the storage shelves. The procedure used by the other Services should be implemented by the Navy as an added quality control procedure to prevent potentially dangerous materiel from being released to the customer.	✓	✓				
Reconciliation of shipping manifest with received products is a very labor intensive process. Use of appropriate automated technologies will streamline this process. Automated access to due-out information would eliminate stocking of items that should be directly delivered to the customer, thereby enabling a JIT system.		✓				
Management of suspended items is labor intensive and prone to error. Information is created and transferred through paper media through several stages of inspection. To improve timeliness and accuracy, all suspended item lists should be automated. This level of automation comprises electronic communication from the point of origin through all inventory control points including customer inventories.	✓	✓				
Items that need to be returned to the original source are currently not resolved in a timely manner. This creates items being stored awaiting disposition. Due to this delay financial inaccuracies may be created, and customer service may be impaired. Automated follow-up procedures for return of goods should be developed to eliminate delays.	✓	✓				
Currently customer requisitions or issue requests are manually generated. These requests are individually received and processed by logistics personnel. These processes involve duplicate creation of data and are labor intensive, error prone, and time consuming. These process should be automated to reduce labor, provide better customer support, and save time.	✓	✓				

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Improvement Opportunity	Category					
	1	2	3	4	5	6
The majority of existing storage and distribution functions operate without contemporary material handling technology (e.g., conveyance systems, automated carousels, optical scanners, and bar code readers). This practice is labor intensive and prohibits implementation of JIT supply support to the end user. Organizations should employ modern material handling technologies with the implementation schedule tied to return on investment. Future standard systems must be designed to integrate effectively with these material handling technologies.	✓	✓				
The current DoD and Service procedures for contracting, purchasing, and making financial payments require extensive manual labor resulting in a long PALT, excessive paper work, and delayed bill payment. Delayed payments result in high interest penalties, and long lead time results in excessive inventories. The Services should review private sector applications of EDI and where applicable to the DoD should be implemented.	✓					
Currently there are no standard criteria or method for effectively measuring how well an organization serves the customers needs. A standard system of data collection and analysis should be developed and implemented by the Medical Logistics community. This system should document customers' perceptions, provide analysis, feedback, and make recommendations for appropriate adjustments.	✓					
Currently every command must stock their own library with product information at a considerable cost. There needs to be a central data bank of information for customers to use. This data bank would include specifications, technical literature, clinical lessons learned, and product comparisons. This information is currently available on CD-ROM and should be made accessible via modem from a central source.	✓			✓	✓	
Changes sometimes occur during the procurement process which adversely impact the ability to satisfy customer needs. Current acquisition status should be available on line to the customer. This would allow more timely changes to be made during the acquisition process.	✓				✓	
At the corporate level funding for facility renovation to support equipment acquisition is funded from a separate account. The persons responsible for the funding tend not to marry up the funding requirements and equipment is ordered that the facility may not be able to accommodate. Have the corporate management level marry up all equipment funding request with facility requests.			✓			
When equipment items are procured, provisions are sometimes not made for operator and maintenance staff training. By incorporating the training into the procurement document, free or reduced cost training may be provided by the vendor.	✓				✓	✓

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Improvement Opportunity	Category					
	1	2	3	4	5	6
There needs to be a comprehensive standard procedures guide to assist customers in obtaining logistics support. This guide should be available in a user friendly electronic format.	✓					
Equipment maintenance, inventory, and property accounting records do not interface and are maintained by different systems, thereby creating duplication of effort. These systems should interface to share like information and eliminate duplicate data entry.				✓		
The Services are required to monitor all property in excess of \$300. This is a manual and very time consuming process resulting in inventory inaccuracies. This process could be improved by instituting the use of RF tags which would automate inventory updates and tracking.				✓		
Different forms are often used for the same purpose. This creates unnecessary costs and duplication of effort in maintaining, procuring, and stocking forms. In addition this hinders interservice operational effectiveness. This is especially critical during joint exercises and contingencies. Standardization of all forms would eliminate these problems. Furthermore these forms should be available on an electronic template.	✓					
Preventive maintenance currently requires excessive man hours to complete. By implementing risk based preventive maintenance a significant savings can be realized. This will reduce the total number of man hours required for preventive maintenance allowing assets to be redistributed to the maintenance side of the house thereby reducing the number of maintenance contracts required. The Navy has already implemented this program in compliance with JCAHO.				✓		
Repair parts sometimes cannot be acquired in a timely manner due to acquisition delays. This creates an increase in equipment down time. The services should authorize the repair facilities to place orders against decentralized blanket purchase agreements (DBPAs), local BPAs, and the use of credit cards.	✓		✓	✓		
Training opportunities for medical repair personnel may be limited due to the local commands' reluctance to release funds when the tour of duty may not provide a payback during the present assignment. This restricts the ability of medical repair personnel to deliver the highest quality maintenance. Training funds for medical repair personnel should be centralized to ensure training opportunities based on the needs of the Service.				✓		✓

1. Customer Service
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6. Training

Improvement Opportunity	Category					
	1	2	3	4	5	6
Personnel often receive specialized training and are assigned where there is no requirement for this training. At times there is a personnel authorization for specialized training which goes unfilled. Due to the inconsistencies in relating training to assignments full benefits of training are not being realized. Efforts should be made to assign personnel with requisite skills to facilities having unique requirements. Assignment personnel need to review personnel training records prior to making assignments						✓
The three Services run separate excess property programs. These programs should be combined to allow for better reutilization of excess resources. Consolidate all excess programs under one office and publish a central list to all Services.	✓	✓			✓	
Currently the DoD spends insufficient funds for facilities maintenance and repair. The industry standard is between two to four percent of the replacement value of facilities. By not appropriating an adequate amount for maintenance and repair, large backlogs are created. Inadequate maintenance reduces the life expectancy of the facility and results in substandard facilities. A concerted effort must be made to develop an awareness of the significant costs associated with improperly maintained facilities such that increased appropriations are authorized.			✓			
Currently there is not a standard methodology to develop lessons learned based on post occupancy evaluations for new construction. Additionally, each service independently collects and maintains records of lessons learned. This results in the potential to repeat mistakes as a result of not having this data available. There should be an automated central repository of data available to obtain information on post occupancy evaluations.			✓			
The three Services independently operate regional field offices to coordinate local facility requirements. This creates a duplication of efforts by understaffed offices. Greater economies could be realized by consolidating regional facility planning functions with a regional health planning office under the DoD auspices.			✓			
Each facility collects building, operation, and medical information for facility requirements in a nonstandard manner. This leads to information being lost, uncoordinated, or misinterpreted as review occurs at higher levels. A standard facility information and reporting system should be developed and implemented.			✓			
Local activities create service contract specifications that may exist at other locations. This is a time consuming and manpower intensive effort. Create a central repository that contains the requirements for a variety of service and contractual needs. Templates of standard criteria for contract performance should be developed and used by all Services.	✓		✓		✓	

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Improvement Opportunity	Category					
	1	2	3	4	5	6
There are not enough trained personnel within the facility management arena. This creates inefficient planning and asset distribution. Establish an aggressive campaign to recruit, train, and retain personnel with engineering backgrounds to help plan and manage the facility assets.			✓			✓
The life cycle management of facilities for real property maintenance activities, is structured such that only critical or emergency requirements are resolved. A corporate strategy for acquisition of a facility must advocate the maintenance and repair requirements through the life of the facility.			✓		✓	
There is no corporate facility inventory or condition assessment model which results in inefficient distribution of resources. Develop and implement standard reporting procedures for facility inventory and condition assessment.	✓		✓			
Current facility operational programs (e.g., safety, life safety, waste management, physical security) are not managed consistently at the local level. Many programs are manually tracked and filed. This creates a duplication of effort and inconsistent procedures. An automated system would reduce the level of manpower required and increase consistency within the programs.	✓		✓			
There are innumerable regulations and guidelines dictating facility requirements (e.g., Occupational Safety and Health Administration (OSHA), National Fire Protection Agency (NFPA), Uniform Facility Accessibility Standards (UFAS)). Often there is no way to ensure compliance with all applicable regulations and guidelines. Establish a central repository for all facility regulations and guidelines.	✓		✓			
Current building operation programs (e.g., preventive maintenance, utilities, communication systems) are not managed consistently at the local level. Many programs are manually tracked and filed. This creates a duplication of effort and inconsistent procedures. In addition, requirements are often not identified in a timely and consistent manner. An automated system would assist in tracking and identifying requirements, increase consistency within the program, and ensure accurate record keeping.	✓		✓		✓	
Maintain facilities commensurate with the readiness mission that it supports; and to deliver an economically prudent range of healthcare services. Many activities maintain old, outdated facilities. These facilities are often larger than necessary and are seldom configured or equipped to provide efficient services. The status quo has allowed the facility capability or even the staffing to remain constant while the demand is fluctuating due to changes in demographics and technological advances. There should be a periodic review and analysis to determine the best economic solution and a business plan established to optimally meet the military mission and the healthcare market.			✓			

1. Customer Service
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Improvement Opportunity	Category					
	1	2	3	4	5	6
Currently all three Services maintain unique space and functional criteria. This is a duplication of effort to maintain and update individual criteria. Adopt and maintain Tri-Service standards that prescribe space and functional requirements.	✓		✓			
Space utilization is assigned within an MTF according to many factors such as mission requirements, functionality, political persuasion, and resources available. This results in inefficient space allocation. Space allocation should incorporate productivity comparisons to verify space is used most effectively.	✓		✓			
Medical Logistics has a requirement to collect data as input to periodic reports. Often, the data is not readily available or not gathered in a format consistent with report formats. Establish standard electronic templates of reports linked to integrated databases. Under this procedure as databases are updated, real time reports would be available, and could be forwarded electronically as needed.			✓	✓	✓	
There are several automated systems employed in Medical Logistics that operate independently and do not interface with other systems. This results in duplication of efforts, additional training for multiple systems, and multiple work stations for related functions. There should be a single system that fully integrates all automation for Medical Logistics. This system software should also be compatible with other systems (e.g., Composite Health Care System (CHCS), Medical Office Automation (MED-OA)).	✓					✓
Logistics customers are required to be familiar with a broad set of logistics unique terminology and codes to communicate their needs and receive status of current requisitions. As a result, customers spend a large amount of time translating their needs into proper logistics terminology. A customer interface should be established which allows for standard English phrases instead of logistics unique codes and terms.	✓					
A large amount of time and money is spent by Service personnel on temporary duty to accomplish face to face meetings. In many instances, the meetings and exchange of information could be accomplished with teleconferencing capabilities. This technology is already in use at larger facilities. The use of this technology should be expanded to smaller facilities where economically feasible and appropriate.	✓					✓
Logistics data is entered on many different forms and in many different information systems. Data entry is not centralized which results in redundant data entry. Integrated databases should be established to standardize data entry and eliminate redundant processes.	✓		✓	✓	✓	

1. Customer Service
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6. Training

Improvement Opportunity	Category					
	1	2	3	4	5	6
There are a large amount of resources devoted to shipping, storing, and accessing logistics publications and documents in paper formats. These activities are extremely inefficient. Paper documents and publications should be placed and indexed in an electronic filing system at central locations. Users could access disks as needed through networks by using appropriate search criteria.	✓					
As Contracting Officer Technical Representatives (COTRs) are assigned at the local level, they are advised of their responsibilities through various means. These ways include local or centralized training at the service level and may be formal or informal. This results in many inconsistencies in the performance of COTR duties. Standard COTR training packages should be developed and made available to all services.						✓
Existing automated systems offer little on-line help. Training programs focus primarily on operating these systems versus the real functions of Medical Logistics. Future automated systems should have on-line help and built in tutorials so that training can be focused on Medical Logistics functions.						✓
Currently, the procurement history and alternate sources of supply are not readily identifiable. This puts an additional workload on the customer and logistics personnel. Information systems should allow for procurement history to be recorded. This history should include previous sources and prices.	✓					
The current method of generating a CBA is inconsistent, time consuming, and labor intensive. Standard models with electronic templates should be developed to facilitate completion of a CBA for selected equipment acquisitions.	✓				✓	

1. Customer Service
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6. Training

Appendix J Terms

Activity Based Costing (ABC)

An accounting technique that allows an enterprise to determine the actual costs associated with each product and service produced by that enterprise without regard to the organizational structure of the enterprise.

Activity Model

A graphic representation of a business process that exhibits the activities that make up the business process to any desired level of detail. An activity model reveals the interactions between activities in terms of inputs and outputs while showing the controls placed on each activity and the types of resources assigned to each activity.

Air Force Specialty Code (AFSC)

An identifier which relates to a unique job description.

Assemblages

A medical set which consists of a combination of expendable, durable, or nonexpendable items. When an assemblage is issued to a user, a components list is included.

Benchmarking

A method of measuring processes against those of recognized leaders. It helps establish priorities and targets leading to process improvement. It is undertaken by identifying processes to benchmark and their key characteristics; determining who to benchmark; collecting and analyzing data from direct contact, surveys, interviews, technical journals, and advertisements; determining the "best of class" from each benchmark item identified; and evaluating the process in terms of the benchmark set and the improvement goals.

Billet Sequence Codes (BSC)

An authorized personnel requirement listed on an organization's personnel manpower document. The particular occupational specialty required may be identified by this code.

Blanket Purchase Agreement (BPA)

Agreements negotiated by DPSC or the local contracting officer with specific vendors to cover the recurring requirements for selected local purchase items.

Business Process Improvement Program (BPIP)

The application of a Business Process Redesign Methodology (BPRM) to one or more related business processes enabling an enterprise to improve the value of its products and services while reducing resource requirements. The results of a successful BPIP are productivity and quality improvements. A business case or action plan is a required deliverable for all BPIP actions. A BPIP may or may not include business process redesign actions.

Business Process Redesign

The action of analyzing AS-IS activity and rule models with the intent to construct a TO-BE activity and rule model that will yield potential improvements in the performance of the business process.

Business Process Redesign Methodology (BPRM)

A well-defined, integrated set of methodologies, techniques, and automated tools that enable an enterprise to conduct a BPIP.

Civilian Health and Medical Program of the Uniformed Services (CHAMPUS)

A reimbursement program administered by the DoD to provide health care services to authorized beneficiaries receiving care from civilian sources

Consumables

Supplies that are consumed in use (e.g., surgical dressings and drugs) or that lose their identity (e.g., repair parts).

Context Diagram

Represents a single activity of the subject being modeled.

Continuum of Conflict

Natural disasters, armed hostilities, and/or other contingencies that drive the readiness posture of the military community.

Corporate Information Management (CIM)

A DoD program designed to reduce costs and increase effectiveness through analysis of business processes. The main focus of the initiative is on management methods, and its primary objective is business process improvements.

Data Model (Business Rule Model)

A graphical representation of an organization's information and data assets expressed in terms of entities and relationships. Relationships are also called business rules because they enable or constrain business actions. Data models, like activity models, have AS-IS and TO-BE representations.

Decentralized Blanket Purchase Agreement (DBPA)

These contracts allow authorized individuals within and outside the contracting office to submit orders directly to the vendor.

Decomposition Diagram

A more detailed, lower level diagram representing the internal activities of the parent activity box.

Defense Medical Facilities Office (DMFO)

The resource sponsor responsible for identifying requirements, prioritizing needs, and allocating funds for maintenance, renovation, and replacement of health care facilities. DMFO works for the Assistant Secretary of Defense for Health Affairs.

Defense Medical Standardization Board (DMSB)

A DoD board whose mission is to standardize supplies and equipment used in contingency, war reserve, and deployable medical systems, sets, kits, and outfits.

Defense Reutilization and Marketing Office (DRMO)

The DoD office responsible for the collection, redistribution, sales, and disposal of excess and unserviceable materiel.

Diagnosis Related Group (DRG)

A classification for a medical diagnosis. It provides specific codes that are used to describe the reason for admitting a patient to a hospital. DRGs were established as a means to control health care costs. A statistical average is used by third party payers to set predetermined fees based on the admission diagnosis.

Durables

An expendable item that is not consumed in use and has a life expectancy in excess of one year, but does not qualify as an equipment item.

Electronic Commerce

A complementary set of technology and business practices which transmit standard business transactions (e.g., orders, invoices, and payments) electronically.

Enterprise Data Model

The common representation of the conceptual business rules within an organization. Using IDEF1X techniques, this model is shown as data entities and relationships.

Federal Acquisition Regulations (FAR)

A set of regulations that govern the acquisition of materiel for government agencies.

Functional Economic Analysis (FEA)

A methodology for analyzing and evaluating alternative investments and management practices. Within DoD, an FEA is a business case.

IDEFO

An activity, or process, modeling technique.

IDEFIX

A rule, or data, modeling technique.

Input, Control, Output, Mechanism (ICOM)

The acronym for the roles of data or material on an activity model. ICOMs are represented by arrows that interconnect activity boxes. They are named using a noun or noun phrase.

Input. Data or material used to produce an output of an activity.

Control. Data that constrain or regulate the activity. Controls regulate the transformation of inputs into outputs.

Output. Data or materials produced by or resulting from the activity. It must include the input data in some form.

Mechanism. Usually people, machines, or existing systems that provide energy to, or perform the activity.

Integrated Computer Aided Manufacturing Definition Language (IDEF)

IDEF modeling techniques were derived from the Integrated Computer Aided Manufacturing (ICAM) program sponsored by the U.S. Air Force. The widely used techniques were designed to capture the processes and structure of information in an organization.

Inter-Service Support Agreement (ISSA)

A written agreement between two or more Services that delineates terms of a support arrangement.

Investment Equipment

An equipment item or system with a unit cost of \$15,000 or more which is funded through the Other Procurement (OP) appropriation.

Joint Commission for the Accreditation of Healthcare Organizations (JCAHO)

An organization which verifies that health care operations are in compliance with guidance and standards established by the commission.

Leaf Node

A node that depicts the lowest level decomposition of an activity.

Materiel Safety Data Sheet (MSDS)

A document that provides information concerning chemical components of a materiel item. It provides cautions, disposal instructions, and procedures for treatment of toxicity.

Medical Expense and Performance Reporting System (MEPRS)

A DoD accounting system used to record man hours and expenses for the performance of work.

Medical Functional Integration Management (MFIM)

A DoD Health Affairs office which is responsible for reviewing business processes and identifying improvements for the functional areas of blood, dental, logistics, managed care, preventive medicine, nursing, and wartime medicine.

Memorandum of Understanding (MOU)

A written agreement between two or more agencies or organizations which delineates terms of a support arrangement.

Military Construction (MILCON) Project

An identified construction program in excess of \$300,000.

Military Occupational Specialty (MOS)

An alphanumeric code which serves as a skill identifier for Army enlisted personnel.

Minor Equipment

Medical equipment with a unit cost under \$15,000 which is purchased using O&M funds. This equipment is also called expense equipment.

National Fire Protection Association (NFPA)

An organization which sets guidance for fire protection. This guidance is recognized as the authority for fire protection compliance.

National Stock Number (NSN)

A 13 character identifier for an item of supply or equipment listed in the federal supply system.

Node Tree

A node tree is a type of activity diagram. An activity and its decompositions are displayed in a hierarchical manner. No ICOMs are shown on a node tree. Since activity diagrams and their decompositions are represented on many pages in a model, a node tree can be used to overview a model. They are also useful for trying out different decomposition strategies before drafting activity diagrams.

Occupational Safety and Health Association (OSHA)

An organization responsible for setting the standards for safety of personnel within the working environment.

Operation and Maintenance Funds (O&M Funds)

Congressionally appropriated funds allocated to organizations to allow for the operation of day to day business.

Other Procurement (OP)

A congressional appropriation specifically for the acquisition of equipment and systems with a unit cost of \$15,000 and above.

Planning, Programming, and Budgeting System (PPBS)

An annual process required to obtain resources from congressional appropriations.

Prime Vendor

A vendor under contract with DPSC to satisfy consolidated requirements by participating organizations.

Procurement Administrative Lead Time (PALT)

The time it takes from processing of the requisition to the award of the purchase order or contract.

Radio Frequency (RF) Tag

An equipment identifier that transmits a radio frequency signal to facilitate inventory management.

Retail Supply System

A system of managing materiel for issue or resale to customers within the Services.

Specialty Skill Identifier (SSI)

An alphanumeric code which serves as a skill identifier for Army officers.

War Reserve Materiel (WRM)

Supplies and equipment required to augment peacetime assets to support forces, missions, and activities reflected in the Service war plans.

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Appendix K Acronyms

ABC	Activity Based Costing
AFMLO	Air Force Medical Logistics Office
AFSC	Air Force Specialty Code
AMEDDPAS	Army Medical Department Property Accounting System
ASD(HA)	Assistant Secretary of Defense, Health Affairs
BIOFACS	Biomedical and Facilities Systems
BPA	Blanket Purchase Agreement
BPIP	Business Process Improvement Program
BPRM	Business Process Redesign Methodology
BSC	Billet Sequence Code
CBA	Cost Benefit Analysis
CHAMPUS	Civilian Health and Medical Program of the Uniformed Services
CHCS	Composite Health Care System
CIM	Corporate Information Management
COTR	Contracting Officer's Technical Representative
CPD	Central Processing and Distribution
DBPA	Decentralized Blanket Purchase Agreement
DFAS	Defense Finance and Accounting Service
DMLSS	Defense Medical Logistics Standard System
DMRD	Defense Management Review Decision
DoD	Department of Defense
DPSC	Defense Personnel Support Center
DRMO	Defense Reutilization and Marketing Office
DTO	Direct Turnover
EDI	Electronic Data Interchange
FEA	Functional Economic Analysis
FEO	For Exposition Only
FIM	Functional Integration Management
FSS	Federal Supply Schedule
GFM	Government Furnished Materiel
HVAC	Heating, Ventilation, and Air Conditioning

ICAM	Integrated Computer Aided Manufacturing
ICOM	Input, Control, Output, Mechanism
IDEF	Integrated Computer Aided Manufacturing Definition Language
IDEF0	Activity Model
IDEF1X	Data Model
ISSA	Inter-Service Support Agreement
JCAHO	Joint Commision for the Accreditation of Healthcare Organizations
JCS	Joint Chiefs of Staff
JIT	Just-In-Time
JLSC	Joint Logistics System Command
MED-OA	Medical-Office Automation
MEDLOG	Medical Logistics System
MEDLOG JR	Medical Logistics Junior System
MEPRS	Medical Expense and Performance Reporting System
MFIM	Medical Functional Integration Management
MHSS	Military Health Services System
MICRO-MICS	Micro Medical Inventory Control System
MICS	Medical Inventory Control System
MILCON	Military Construction
MOS	Military Occupation Specialty
MOU	Memorandum of Understanding
MSDS	Materiel Safety Data Sheet
MTF	Medical Treatment Facility
NFPA	National Fire Protection Agency
NMLC	Navy Medical Logistics Command
NSN	National Stock Number
O&M	Operations and Maintenance
ODASD(HSO)	Office of the Deputy Assistant Secretary of Defense, Health Service Operations
OP	Other Procurement
OSHA	Occupational Safety and Health Administration
PALT	Processing and Administrative Lead Time
PBD	Program Budget Decision
PMBS	Property Management and Budgeting System
PPBS	Planning, Programing, and Budgeting System
QA	Quality Assurance

RF	Radio Frequency
RPMA	Real Property Maintenance Activity
SRA	Systems Research and Applications Corporation
TAMMIS	Theater Army Medical Management Information System
TPF	Total Package Fielding
UFAS	Uniform Facilities Accessibility Standards
USAMMA	United States Army Medical Materiel Agency
WRM	War Reserve Materiel

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